



Service Manual

Nakamichi

DRAGON-CT

Computing Turntable



CONTENTS

1.	General	2
2.	Jigs and Gauges for Adjustment	2
3.	Setup for Adjustments	3
3. 1.	Removal of Dust Cover, Platters and Insulator Covers	3
3. 2.	Removal of Connectors	3
3. 3.	How to Set up Top Board Upside Down	4
3. 4.	How to Set up Top Board Normally	5
4.	Removal of Main Parts	5
4. 1.	Tonearm	5
4. 2.	Sensor Arm	6
4. 3.	Center Search Rod Housing Ass'y	7
5.	Mechanical Adjustments	8
5. 1.	Name of Main Parts	8
5. 2.	Tonearm Auto-return Start Position Adjustment	8
5. 3.	Sensor Arm Descending Position Adjustment	9
5. 4.	Tonearm Cueing Height Adjustment	9
5. 5.	Leaf Switch Adjustment	9
5. 6.	Center Search Rod Mechanism Chassis Position Adjustment	10
5. 7.	Leveling of Turntable	11
5. 8.	Search Arm Stylus Position Check	11
6.	Electrical Adjustments	12
6. 1.	Parts Location for Adjustment	12
6. 2.	Sensor LED Voltage Adjustment	12
6. 3.	Sensor Voltage Adjustment	12
6. 4.	Sensor Amp. Voltage Adjustment	13
6. 5.	Motor Gain Adjustment	13
6. 6.	Speed Adjustment	13
6. 7.	Brake Timing Adjustment	13
7.	Mechanism Ass'y and Parts List	13
7. 1.	Synthesis	13
7. 2.	Top Board (A01)	15
7. 3.	Center Search Platter Ass'y (A02)	16
7. 4.	Control Switch Ass'y (A03)	17
7. 5.	Arm Sensor Ass'y (B01)	17
7. 6.	Arm Elevation Solenoid Ass'y (B02)	17
7. 7.	Sensor Arm Positioner Ass'y (B03)	18
7. 8.	Sensor Arm Mechanism Ass'y (B04)	18
7. 9.	Center Search Rod Mechanism Ass'y (B05)	19
7. 10.	Center Search Rod Housing Ass'y (B06)	19
7. 11.	Control Panel Ass'y (C01)	20
7. 12.	Control Switch P.C.B. Ass'y (C02)	20
8.	Mounting Diagrams and Parts List	21
8. 1.	Return Sensor P.C.B. Ass'y	21
8. 2.	Strobo P.C.B. Ass'y	21
8. 3.	Pitch Control LED P.C.B. Ass'y	21
8. 4.	Return Signal LED P.C.B. Ass'y	21
8. 5.	Connector P.C.B. Ass'y	21
8. 6.	Fuse P.C.B. Ass'y	21
8. 7.	Pitch Control Sensor P.C.B. Ass'y	22
8. 8.	Motor P.C.B. Ass'y	22
8. 9.	Control Switch P.C.B. Ass'y	23
8. 10.	CPU P.C.B. Ass'y	24
9.	Schematic Diagram	25
9. 1.	Attention to Servicemen	25
9. 2.	IC Block Diagrams	25
9. 3.	Schematic Diagram	28
10.	Wiring Diagram	29
11.	Block Diagram	30
12.	Specifications	31

1. GENERAL

1.1. Voltage Selector

Voltage selector is installed on the bottom of the DRAGON-CT for Other version.
This voltage selector can select either 120 V or 220-240 V at customer's disposal.

1.2. Packing Materials and Owner's Manual

<u>Part No.</u>	<u>Description</u>	<u>Q'ty</u>
OC80079A	Inner Carton	1
OC80080A	Outer Carton	1
CA80031A	Cushion Ass'y	2
CA80033A	Platter Case Ass'y	1
CA80034A	Main Case Ass'y	1
OD04219A	Owner's Manual (U.S.A., Canada, UK & Australia)	1
OD04220A	Owner's Manual (220 V Class 2 & Others)	1
OD04221A	Owner's Manual (Japan)	1

2. JIGS AND GAUGES FOR ADJUSTMENT

<u>No.</u>	<u>Description</u>	<u>Part No.</u>	<u>Q'ty</u>
1	Stand	OD09023A	4
2	10, 11P Cord Ass'y (50 cm)	DA09072A	1
3	2P Cord Ass'y (50 cm)	DA09073A	1
4	2P Power Cord Ass'y (70 cm)	DA09074A	2
5	3P Cord Ass'y (70 cm)	DA09075A	1
6	Stylus Positioning Disc	OD09022B	1
7	Stylus Position Check Gauge	OD09024A	1
8	Test Record	OD09031A	1
9	Center Search Rod Positioning Gauge	DA09076A	1
10	Level Gauge	HA08057B	1
11	Cueing Height Adj. Screwdriver	OD09025A	1
12	Tonearm Socket Wrench	DA09077A	1
13	Sensor Arm Socket Wrench (Serves as Torque Wrench)	DA09078A	1
14	Screwdriver (large)	OD09027A	1
15	Screwdriver (small)	OD09028A	1
16	Philips Screwdriver for Main Motor	OD09029A	1
17	Socket Wrench for Main Motor	OD09030A	1

3. SETUP FOR ADJUSTMENTS

Separate the Top Board from the Bottom Board following the next steps and then set them up by using jigs (four Stands and five connector cables indicated in Nos. 1 to 5 of 2. "Jigs and Gauges for Adjustment").

This setup allows the following items without damaging the DRAGON-CT (especially arms).

- Disassembly of Mechanical Parts
- Mechanical Adjustments
- Electrical Adjustments with power supplied.

3.1. Removal of Dust Cover, Platters and Insulator Covers

- (1) Remove F01 (Dust Cover), F02 (Disc Stabilizer), F03 (Turntable Mat), F04 (Center Search Platter) and F05 (Main Platter) in that order and then pull out F06 (Insulator Covers — 4 pcs.).

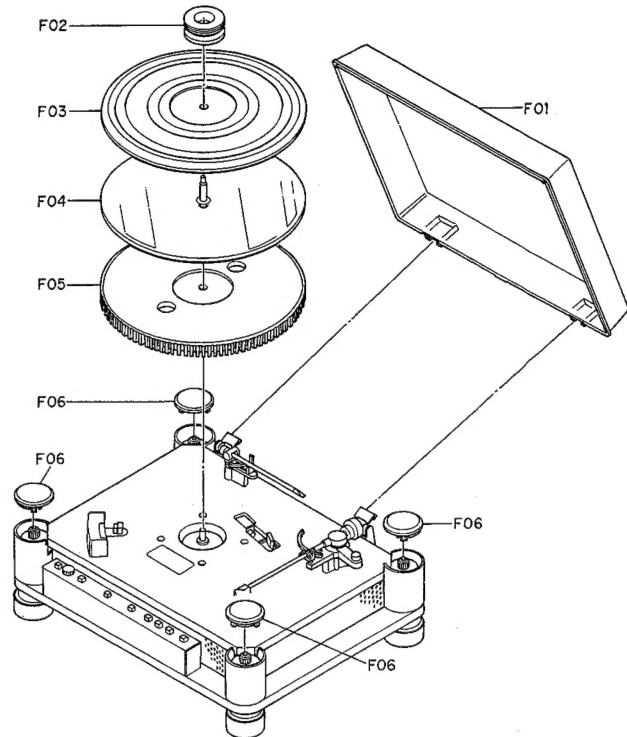


Fig. 3.1

3.2. Removal of Connectors

- (1) Remove F07 and F08 and disconnect two connector cables.
- (2) Remove F09 and lift F10 (Control Switch Ass'y).
- (3) Pull out connector CNP-001 and disconnect three connector cables.
- (4) Assemble F10 (Control Switch Ass'y) with F09.
- (5) Loosen F11 (red Transport Fastening Screws — 5 pcs.) and F12 to release the Top Board from the Bottom Board.

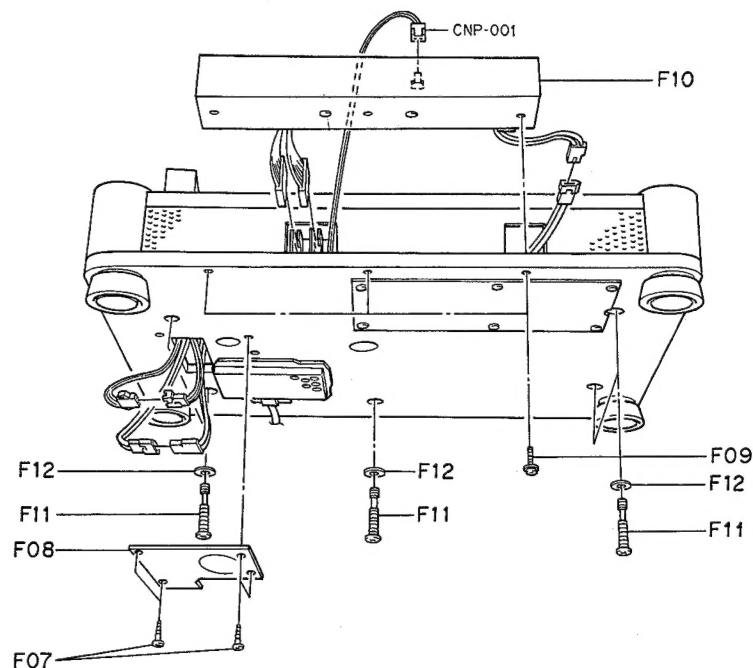


Fig. 3.2

3.3. How to Set up Top Board Upside Down

- (1) Lift up the Top Board with hands and insert four Stands (OD09023A) in the Insulator Housing at every corner of the Bottom Board. Refer to Fig. 3.3.
- (2) Turn over the Top Board as shown in Fig. 3.3 and carefully

place it on the Stands.

- (3) Remove F13, F14 and F15.
- (4) Connect five connector cables (DA09072A, DA09073A, DA09074A (2 pcs.) and DA09075A) between the Top Board and the Bottom Board.

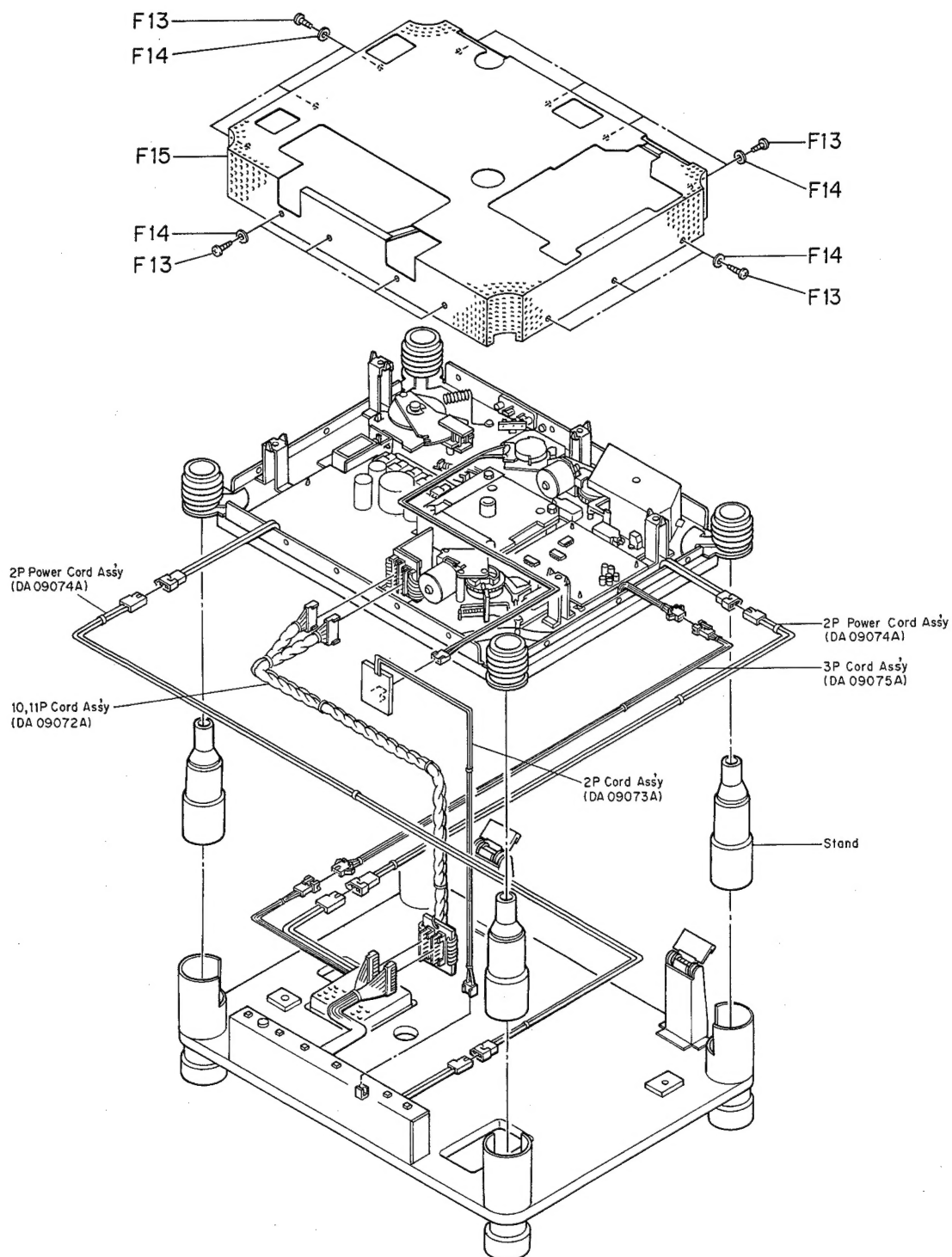


Fig. 3.3

4. REMOVAL OF MAIN PARTS

3.4. How to Set up Top Board Normally

- (1) Hold the Top Board and turn it over and place it on the Stands as shown in Fig. 3.4.

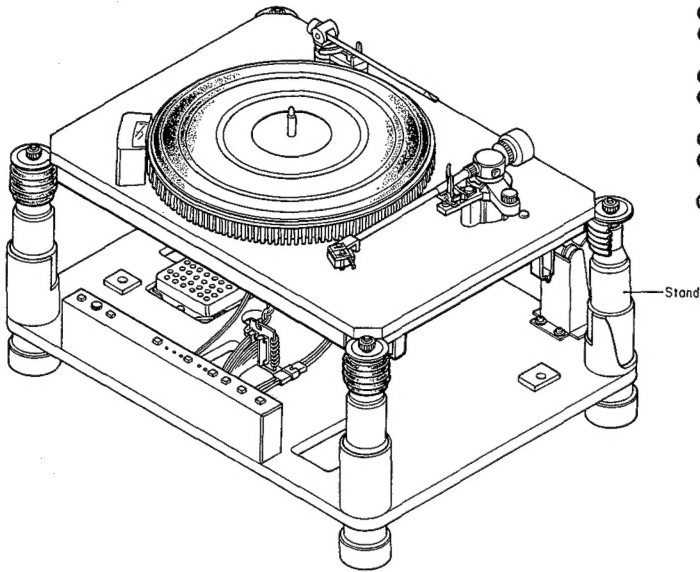


Fig. 3.4

Before removal, set up the DRAGON-CT upside down as indicated in item 3.3.

4.1. Tonearm

- (1) Remove soldering of five signal wires from the Tonearm.
- (2) Loosen F01 with a hexagon wrench (M3) and remove F02 (Arm Sensor Ass'y).
- (3) Remove F03 and F04 (Drive Coil Ass'y).
- (4) Loosen F05 with a hexagon wrench (M3) and remove F06 (Sensor Plate Ass'y).
- (5) Remove F07 and F08 (Arm Elevation Solenoid Ass'y).
- (6) Remove F09 with the Cueing Height Adj. Screwdriver (OD09025A), F10 and F11, and pull out F12.
- (7) Hold F14 and loosen F13 with the Tonearm Socket Wrench (DA09077A), and then remove F14 (Tonearm Ass'y) carefully.

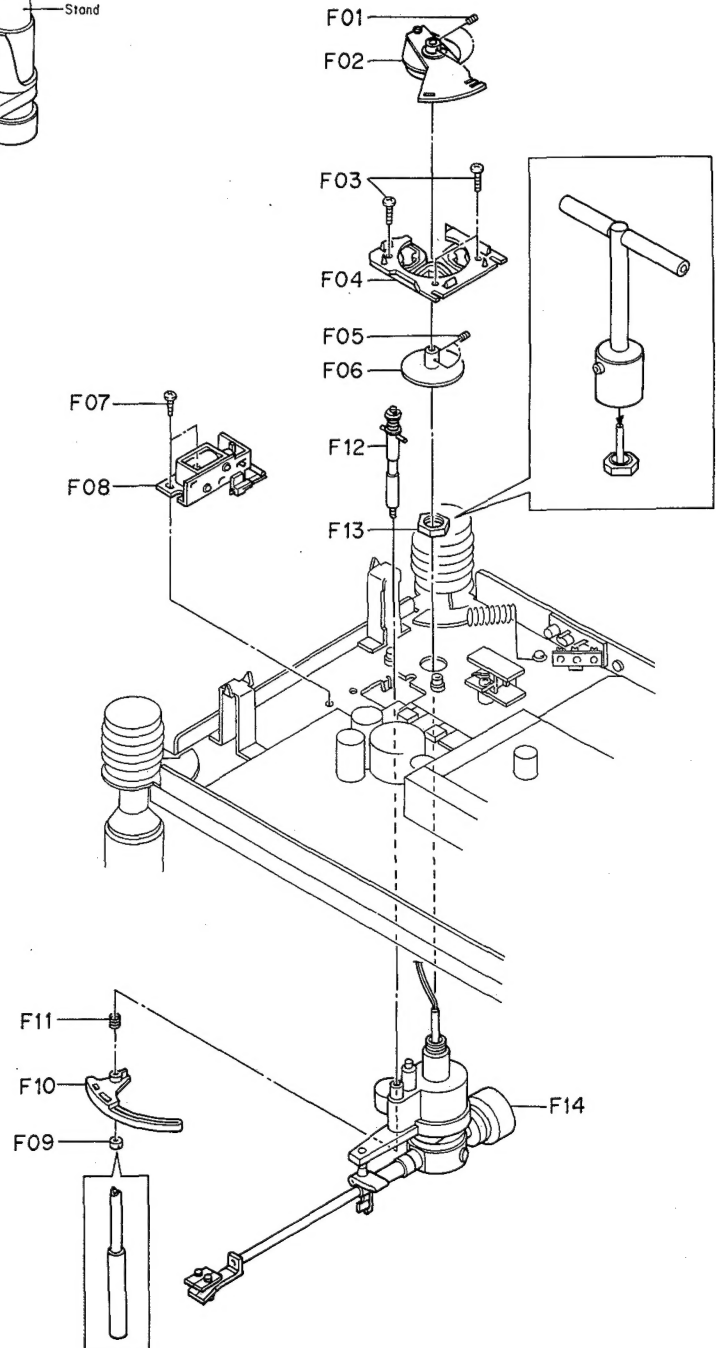


Fig. 4.1

4.2. Sensor Arm

- (1) Remove F01 and F02 (Light Shielding Cover).
- (2) Loosen F03 with a socket wrench (8 mm) and pull out F04 (Sensor Shutter Ass'y) gently without touching other parts.
- (3) Unscrew F05 with the Sensor Arm Socket Wrench (DA0-9078A).
- (4) Hold F08 and remove F06, F07 and then F08 (Sensor Arm Ass'y).
- (5) Loosen F09 with a hexagon wrench (M3) and separate F10 and F11.

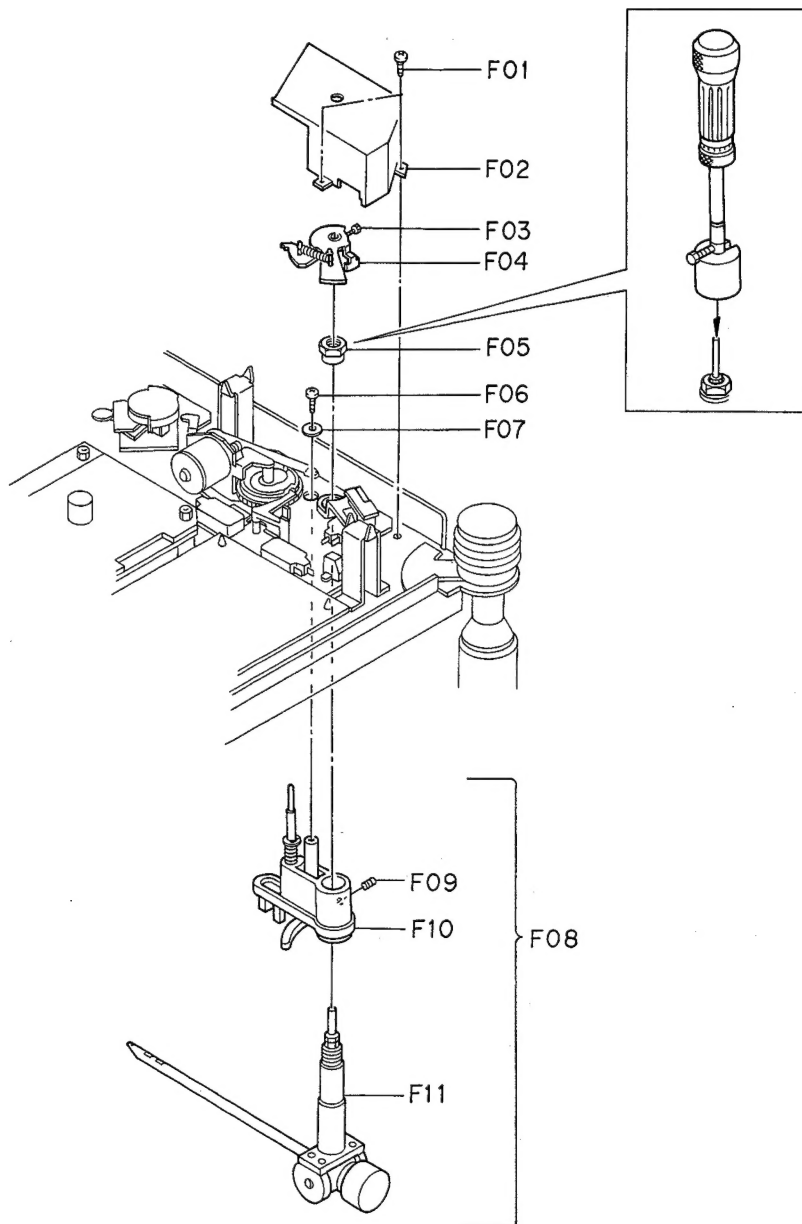


Fig. 4.2

Note: Assembly procedure is the reversal of the above procedure.
However, note the followings:

1. Fastening F05 (Sensor Arm fixing screw):
Tighten F05 with 5 kg-cm torque using the Sensor Arm Socket Wrench which also serves as a torque wrench.
2. Mounting F04 (Sensor Shutter Ass'y):
 - (1) Align the position of the eccentric screw (A) as shown in Fig. 4.3.
 - (2) Insert F04 into the shaft without contacting with the LED & Photo Detector Ass'y. Refer to Fig. 4.4.
 - (3) While pushing the protrusion of the microswitch with a screwdriver, insert F04 until it stops. Refer to Figs. 4.4

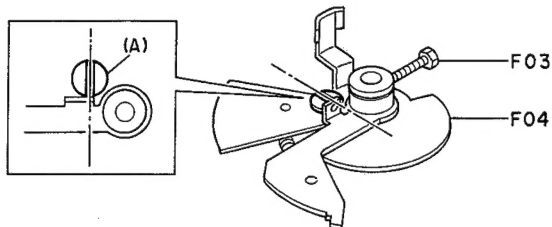


Fig. 4.3

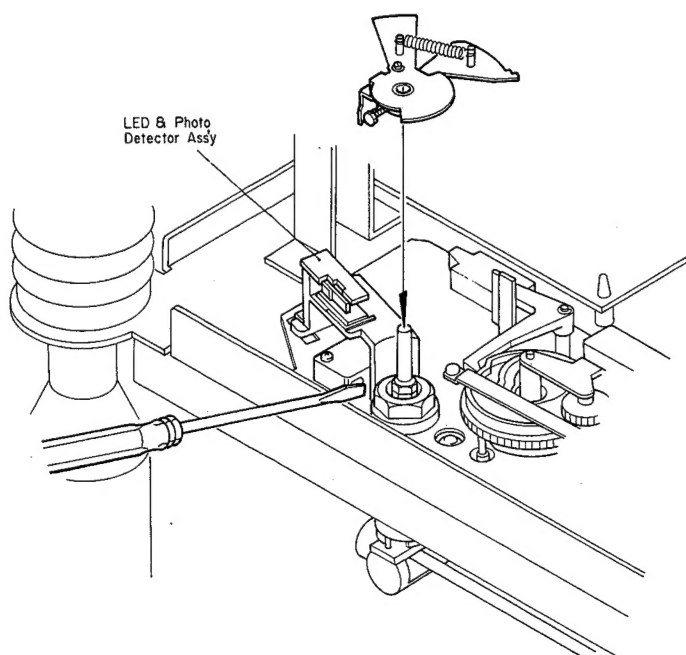


Fig. 4.4

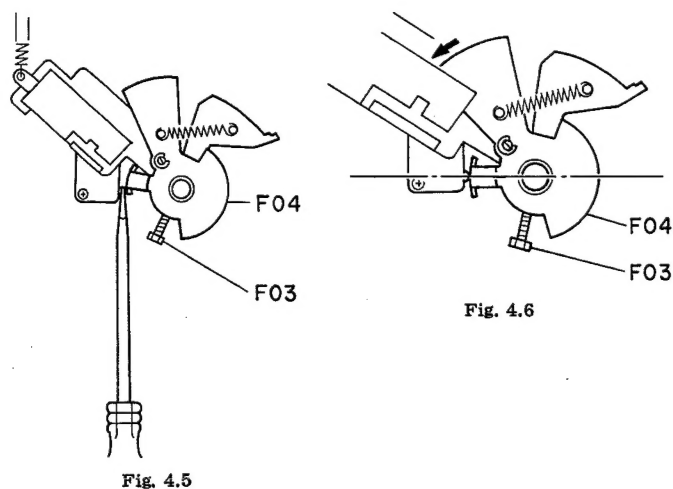


Fig. 4.5

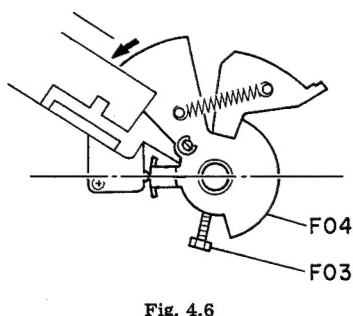


Fig. 4.6

- and 4.5.
- (4) Turn F04 and align so that it is located as shown in Fig. 4.6. Tighten F03 with a socket wrench. Be sure that the Sensor Arm stays on the Sensor Arm Rest.

4.3. Center Search Rod Housing Ass'y

- (1) Remove F01 and F02, and then pull F03 (Center Search Rod Housing Ass'y).
- (2) Remove F04 (Pitch Control LED P.C.B. Ass'y), F05 (Pitch Control Sensor P.C.B. Ass'y) and F06 (Strobe P.C.B. Ass'y).

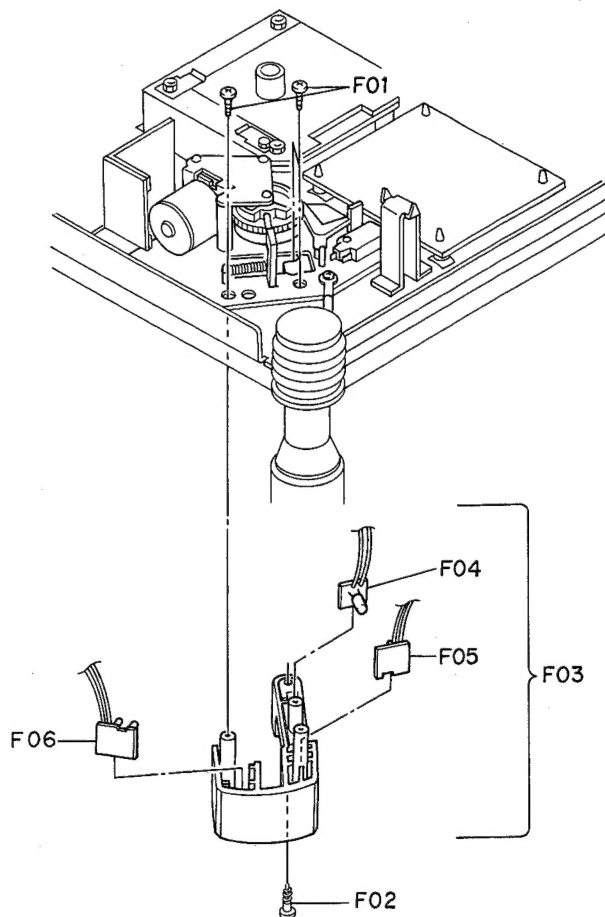


Fig. 4.7

5. MECHANICAL ADJUSTMENTS

5.1. Name of Main Parts

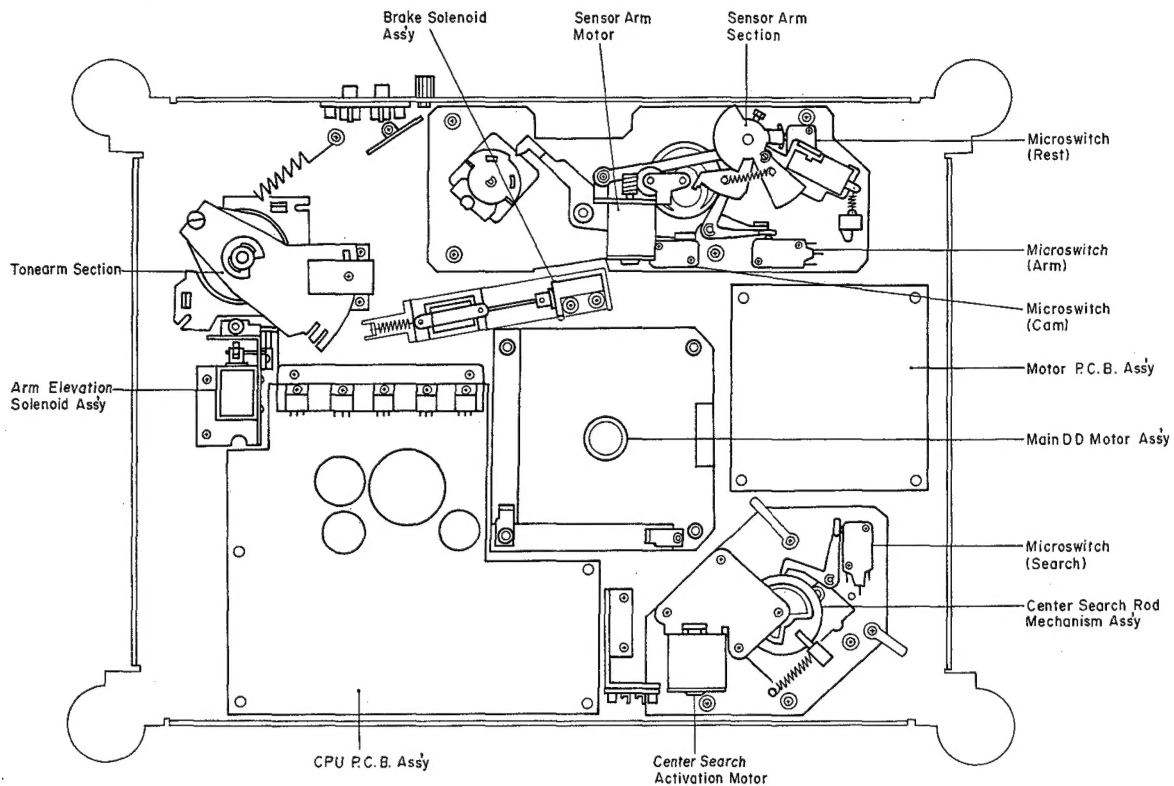


Fig. 5.1

5.2. Tonearm Auto-return Start Position Adjustment

- (1) Push the Nominal Center Reset Button (Center Spindle) with finger tip.
- (2) Remove the Rubber Cap.
- (3) Place the Test Record (0D09031A) on the turntable to play back side 2 of the Record.
- (4) Put the Tonearm on the counting section at the end of the Record. Where, tracks are pitched by 1 mm space. Listen to the counting and check if the Tonearm returns with-

in the following count range.

Disc Size 30/25 cm — 17 to 20 counts

Disc Size 17 cm — 23 to 26 counts

- (5) If the count is not in the above range, adjust the auto-return position by turning the eccentric screw with a screwdriver while putting the Tonearm on the Tonearm Rest.
 - (6) After adjustment, put the Rubber Cap in the original place.
- Note: Do not activate the center search operation as the endless groove of the Test Record is not located in normal position.

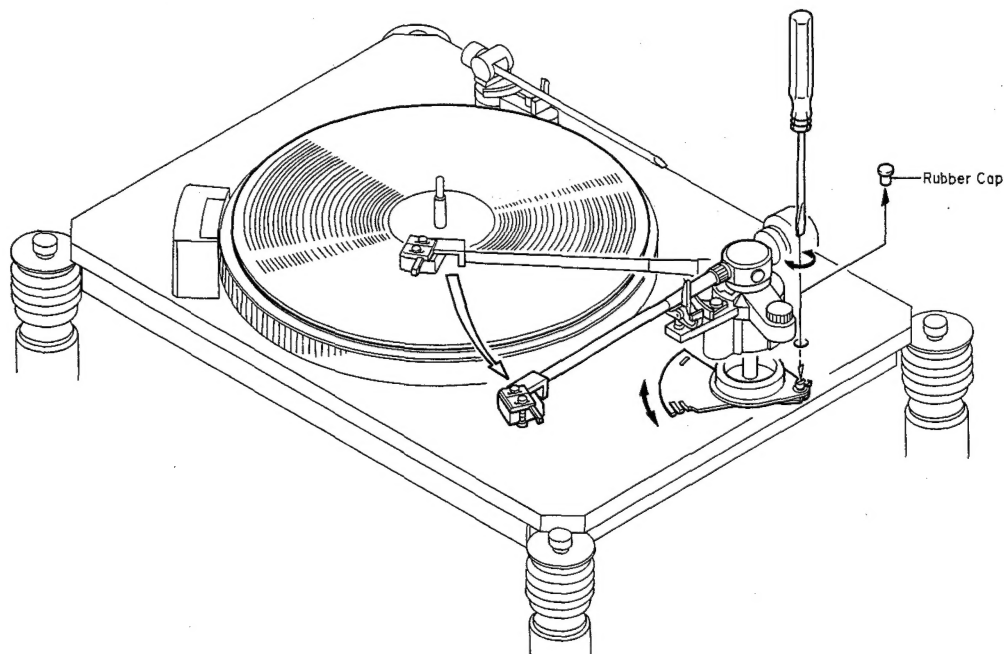


Fig. 5.2

5.3. Sensor Arm Descending Position Adjustment

- (1) Push the Nominal Center Reset Button (Center Spindle) with finger tip.
- (2) Put the Stylus Positioning Disc (0D09022B) on the turntable.
- (3) Press the Disc Size Selector Switch 17 to select size 17.
- (4) Press the Center Search Switch and check the stylus descending position on the Disc.
- (5) If stylus is not located within the scribed lines for disc size 17, place the Sensor Arm to the Sensor Arm Rest and turn the eccentric screw (A) to locate the stylus on the specified range.

5.4. Tonearm Cueing Height Adjustment

- (1) Move the Tonearm away from the Rest.
- (2) Turn the screw of Arm Elevator with the Cueing Height Adj. Screwdriver (0D09025A) to adjust the cueing height of the Tonearm as shown in Fig. 5.4.

5.5. Leaf Switch Adjustment

- (1) Remove the Arm Elevation Solenoid Ass'y referring to item 4.1.
- (2) With pushing the solenoid shaft in the direction of arrow, adjust the screw (B) so that the deflection of the switch is approx. 0.5 mm as shown in Fig. 5.5.
Note: If deflection is insufficient, the Tonearm tends to rise slantwise when the Tonearm returns to the Arm Rest.
- (3) Install the Arm Elevation Solenoid Ass'y.

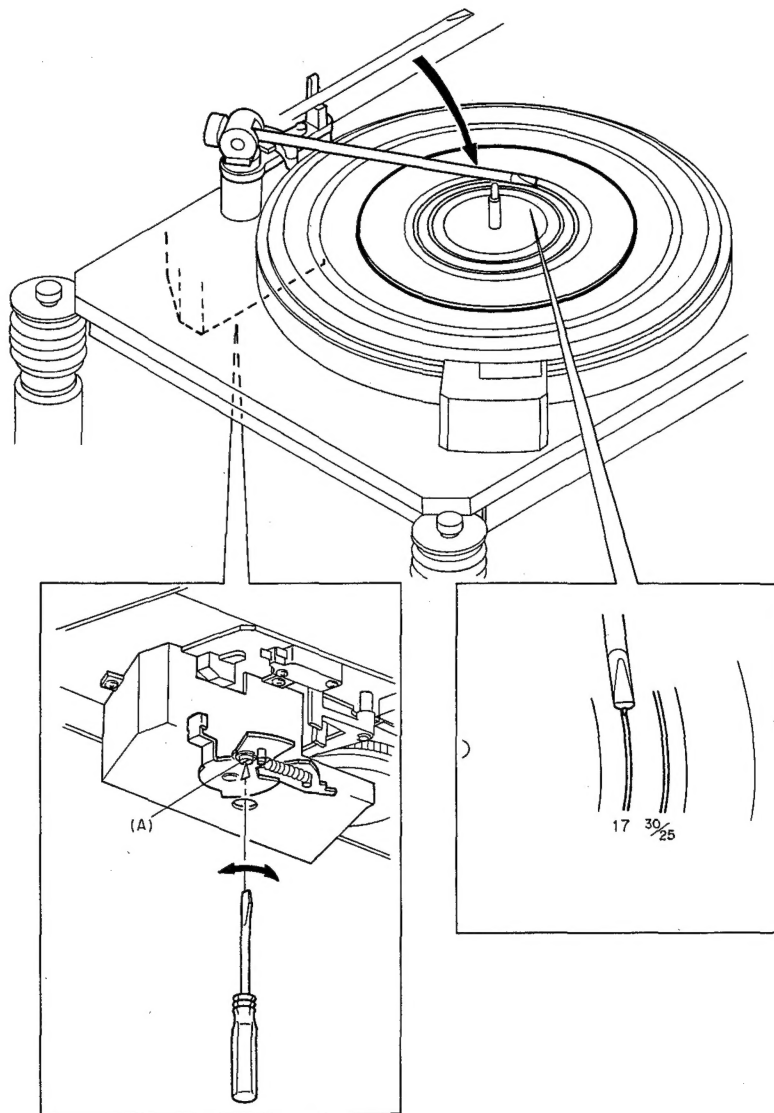


Fig. 5.3

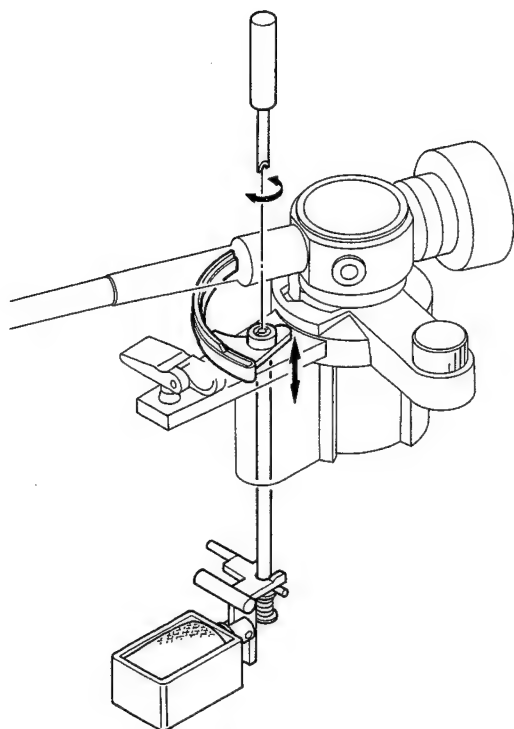


Fig. 5.4

- 5.6. Center Search Rod Mechanism Chassis Position Adjustment**
- (1) Remove screw (C) from the Center Search Rod Mechanism Chassis and loosen three screws (D).
 - (2) Install the Center Search Rod Positioning Gauge (DA0-9076A) as shown in Fig. 5.6. Protruding shaft of the Main DD Motor Ass'y is inserted into the hole of the Gauge, and the protruding pin of the Gauge is

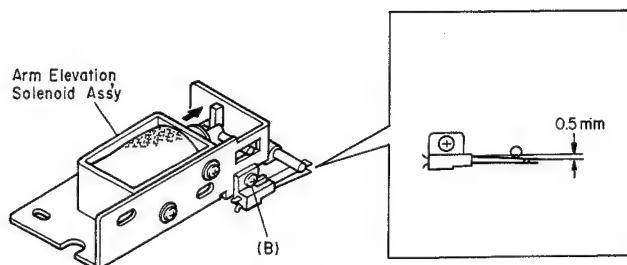


Fig. 5.5

- inserted into the hole where screw (C) was mounted.
- (3) Move the Mechanism Chassis so that the pin (E) of the Arm Ass'y is centered in the slit of the Gauge.
- (4) Fasten three screws (D).
- (5) Remove the Gauge and mount screw (C) on the original place.

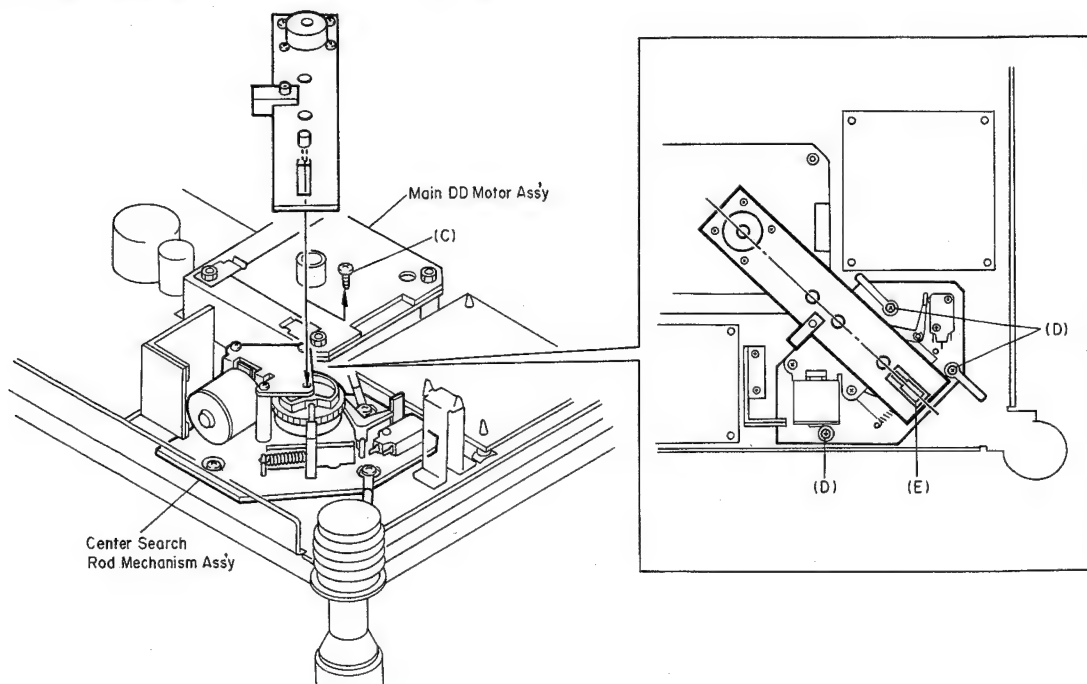


Fig. 5.6

5.7. Leveling of Turntable

It is important to level the turntable to securely perform the center search operation.

Leveling must be made with the Stands (OD09023A) removed and the Top Board putted on the Bottom Board normally.

- (1) Place the Level Gauge (HA08057B) on the Top Board.
- (2) Turn the Top Board Height Adjustment Screws at every corner to level the turntable.

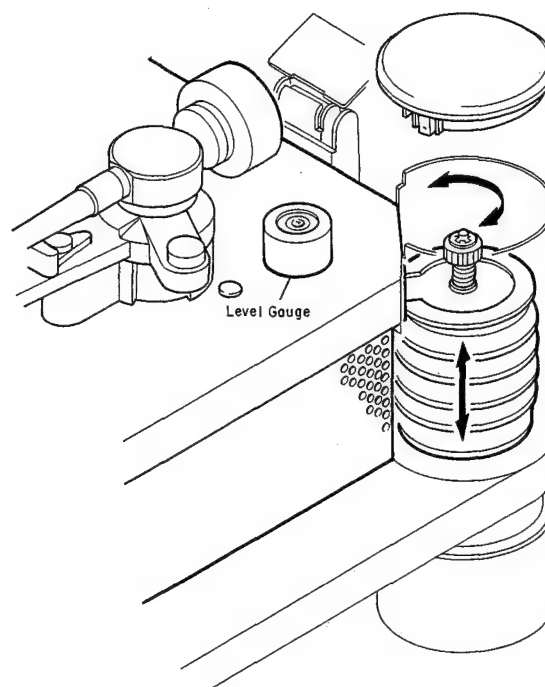


Fig. 5.7

5.8. Search Arm Stylus Position Check

- (1) Put a record on the turntable and press the Center Search Switch to conduct center search operation.
- (2) Turn the power OFF just before the Center Search Rod contacts with the Center Search Platter. Return the Sensor Arm to the Arm Rest by hand.
- (3) Remove the record and the Turntable Mat.
- (4) Press the Nominal Center Reset Button (Center Spindle).
- (5) Insert the Stylus Position Check Gauge (OD09024A) into the Center Spindle and place it so that the Rod is located between the scribed lines on the Gauge as shown in Fig. 5.8 (A).
- (6) Position the tip of the Stylus to the intersection of vertical and horizontal scribed lines as shown in Fig. 5.8 (B) and check whether it is located between the scribed short parallel lines on the Gauge.
- (7) Return the Sensor Arm and remove the Gauge.

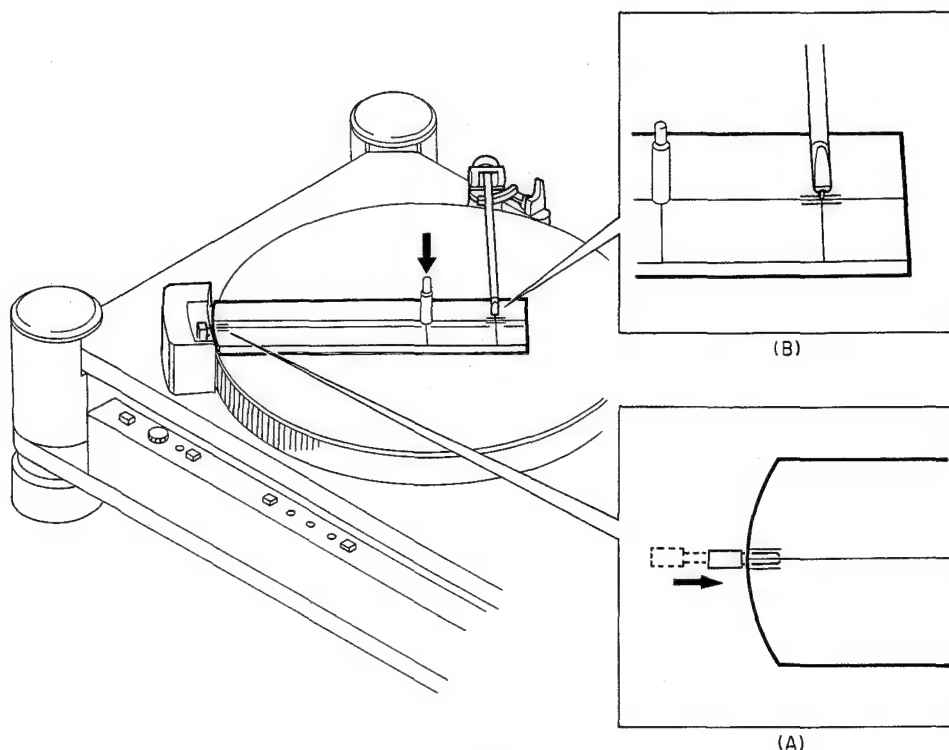


Fig. 5.8

6. ELECTRICAL ADJUSTMENTS

6.1. Parts Location for Adjustment

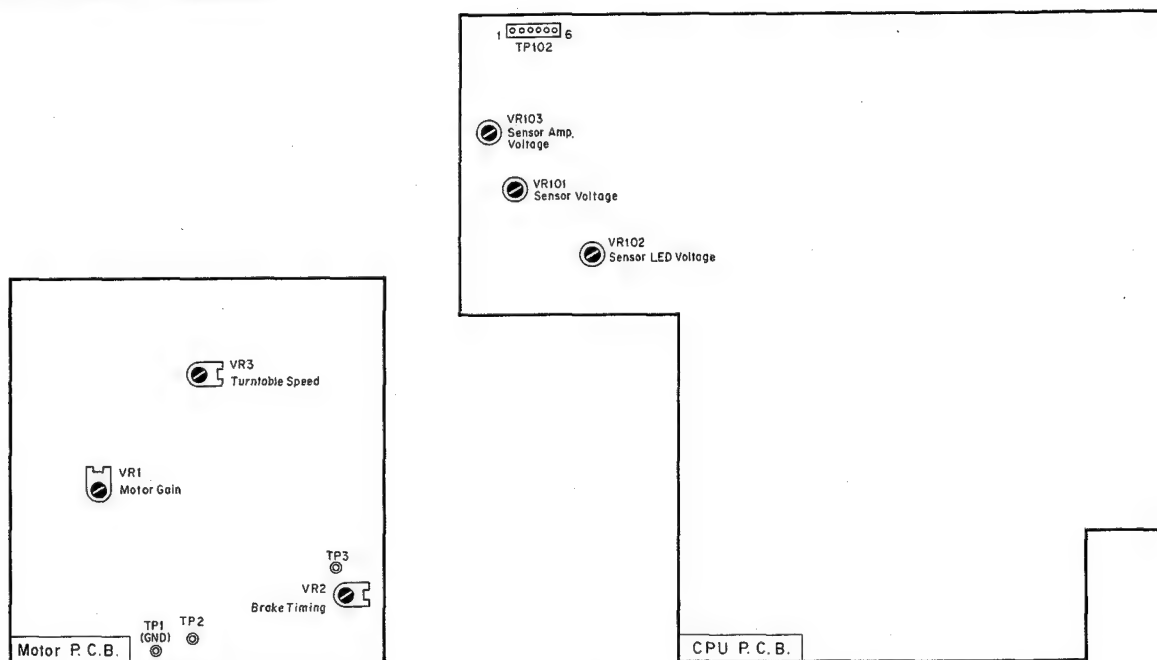


Fig. 6.1

6.2. Sensor LED Voltage Adjustment

- (1) Connect a DC voltmeter between pins 1 (GND) and 2 of the test terminal TP102 on the CPU P.C.B. Ass'y.
- (2) Adjust VR102 on the CPU P.C.B. Ass'y to obtain 0 ± 50 mV on the DC voltmeter.

6.3. Sensor Voltage Adjustment

- (1) Place the Stylus Positioning Disc (0D09022B) on the turntable.
- (2) Press the Nominal Center Reset Button (Center Spindle).
- (3) Turn the power ON.
- (4) Press the Center Search Switch and, after the Sensor Arm Stylus is descended on the Disc, turn the power OFF.
- (5) Turn the power ON again after about 15 seconds.
- (6) Connect a DC voltmeter between pins 1 (GND) and 3 of

TP102.

- (7) Remove the Rubber Cap.
- (8) Place the Sensor Arm Stylus in the outmost groove (R60) on the Disc by hand.
- (9) With combining the adjustments of turning the VR101 on the CPU P.C.B. Ass'y and turning the eccentric screw with a screwdriver, obtain 0.5 V reading on the DC voltmeter.
Note: Adjustment of the eccentric screw must be made with the Sensor Arm placed on the Arm Rest.
- (10) Move the Sensor Arm Stylus to the inmost groove (R45) on the Disc by hand.
- (11) Perform the same adjustment as in (9) to obtain 1.333 V on the DC voltmeter.
- (12) Repeat above steps (8) to (11) a few times.
- (13) Return the Sensor Arm Stylus to the Arm Rest.

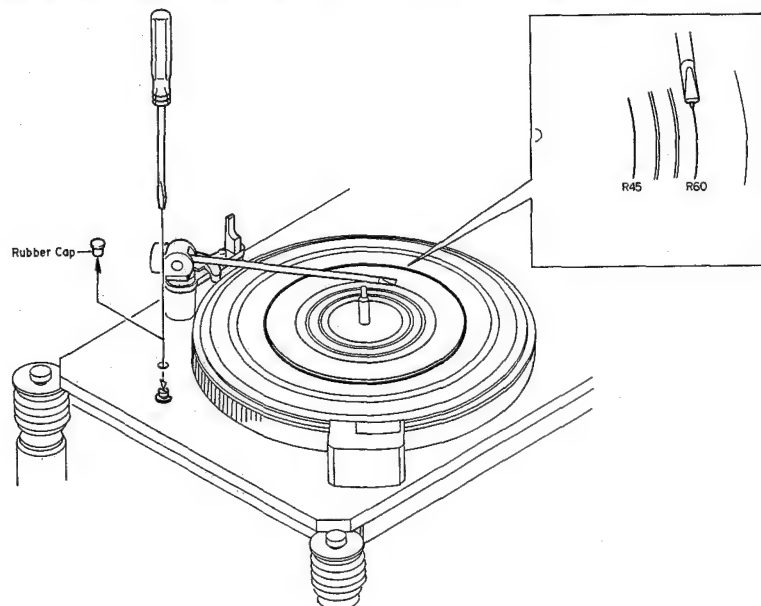


Fig. 6.2

6.4. Sensor Amp. Voltage Adjustment

Note: Perform this adjustment after "Sensor Voltage Adjustment" in item 6.3 is completed.

- (1) Repeat (1) to (5) in item 6.3.
- (2) Connect a DC voltmeter between pins 1 (GND) and 4 of TP102.
- (3) Put the Sensor Arm Stylus in the outmost groove (R50) on the Disc.
- (4) Adjust VR103 on the CPU P.C.B. Ass'y to obtain 2.45 ± 0.01 V on the DC voltmeter.
- (5) Return the Sensor Arm Stylus to the Arm Rest.

6.5. Motor Gain Adjustment

- (1) Connect a wide band wow meter between TP1 (GND) and TP2 on the Motor P.C.B. Ass'y.
- (2) Place the Center Search Platter, Turntable Mat and Disc Stabilizer on the Main Platter and then press the Nominal Center Reset Button (Center Spindle).
- (3) Press the Disc Size Selector Switch 30/25.
- (4) Move the Tonearm towards the center of the platter to turn the turntable.

- (5) Adjust VR1 on the Motor P.C.B. Ass'y to obtain minimum reading on the wow meter.

6.6. Speed Adjustment

- (1) Press the Quartz Lock Switch to turn OFF the Quartz Lock.
- (2) Set the Pitch Control Knob to its mechanical center position.
- (3) Turn the power ON.
- (4) Move the Tonearm towards the center of the platter to turn the turntable.
- (5) Adjust VR3 on the Motor P.C.B. Ass'y so that dark and light stripes around the Main Platter rest while observing stroboscope.

6.7. Brake Timing Adjustment

- (1) Connect a DC voltmeter between TP1 (GND) and TP3 on the Motor P.C.B. Ass'y.
- (2) Adjust VR2 on the Motor P.C.B. Ass'y to obtain $4V \pm 0.2 V$ on the DC voltmeter.

5V.

7. MECHANISM ASS'Y AND PARTS LIST

7.1. Synthesis

Schematic Ref. No.	Part No.	Description	Qty	Schematic Ref. No.	Part No.	Description	Qty
		Synthesis		30	OC80288A	Insulator Case B	4
		Serial No.: V10201001 -		31	CA80115A	Rubber Insulator Ass'y	4
01	CA80030A	Dust Cover Ass'y	1	32	OC80365A	Lock Screw	5
02	CA80116A	Dust Cover Hinge Ass'y	2	33	OC80303A	Cord Stopper	1
03	OC80304A	Dust Cover Support	2	34	OC80438A	Bottom Cover B	1
04	OC80073A	Disc Stabilizer	1	35	OC80448A	Label	1
05	OC80264A	Turntable Mat (U.S.A.)	1	36	OC80437A	Bottom Cover A	1
	OC80263A	Turntable Mat (except for U.S.A.)	1	37	OC80449A	Label	1
06	CA80109A	Center Search Platter Ass'y	1	38	OC80358A	Audio Cable	1
07	CA80262A	Main Platter Ass'y	1	39	OC80300A	Power Coard (U.S.A., Canada & Others)	1
08	CA80166A	Top Board Ass'y	1		OC80298A	Power Coard (UK)	1
09	CA80163A	Insulator Cap Ass'y	4		OC80302A	Power Coard (Australia)	1
10	OC80433A	Top Board Height Adjustment Screw	4		OC80301A	Power Coard (220V Class 2)	1
					OC80299A	Power Coard (Japan)	1
11	CA80132A	Spring Insulator Ass'y	4		OC80570A	Fuse 2A 250V (U.S.A., Canada & Others)	2
12	OC80446A	Vibration Isolating Rubber B	1				
13	OC80447A	Vibration Isolating Rubber C	1		OC80569A	Fuse 2A 125V (Japan)	2
14	OC80445A	Vibration Isolating Rubber A	1		OB08588A	Fuse 1.6AT (UK, Australia & 220V Class 2)	2
15	OC80364A	Punched Metal	1				
16	CA80165A	Control Switch Ass'y	1		OC80572A	Fuse Holder (U.S.A., Canada, Others & Japan)	4
17	OC80297A	Motor Cover	1				
18	CA80136A	Fuse P.C.B. Ass'y	1		OC80571A	Fuse Holder (UK, Australia, & 220V Class 2)	4
19	OC80434A	P.C.B. Spacer	1				
20	OC80450A	Insulator	1		OC80573A	Voltage Selector (Others)	1
21	OC80328A	UL Tube $\phi 3.3 \times 60$	1	L01	OC80469A	M3x4 ϕ Binding	6
22	OC80468A	Bushing B	2	L02	OC80470A	M3x20 ϕ Binding Washer-faced	8
23	OC80295A	Rubber Fitting	2	L03	OE00132A	CS Ring 4mm	4
24	OC80291A	Power Transformer (U.S.A. & Canada)	1	L04	OC80453A	Plastic Washer 5.2x9x0.5	4
				L05	OE00181A	E-Ring 3mm	4
	OC80294A	Power Transformer (UK & Australia)	1	L06	OE00921A	BT 3x8 ϕ Binding (Black Chromate)	14
	OC80293A	Power Transformer (220V Class 2)	1	L07	OC80454A	Fiber Washer 3.2x6x0.5	14
	OC80292A	Power Transformer (Others)	1	L08	OC80452A	M3.1x13 ϕ Fan (Wood Screw)	11
	OC80290A	Power Transformer (Japan)	1	L09	OC80327A	Wire Clamper	1
25	OC80296A	Power Transformer Holder	2	L10	OC80471A	M4x45 ϕ Fan	2
26	OC80436A	Bushing A	2	L11	OC80472A	Washer 4.2x20x0.5	2
27	OC80286A	Bottom Board	1	L12	OC80473A	M3x30 ϕ Fan	12
28	OC80289A	Spring Insulator Receiver	4	L13	OE00581A	Spring Washer 3mm	12
29	OC80287A	Insulator Case A	4	L14	OE00030A	Washer 3x8x0.5	12
				L15	OE00507A	Nut Hex. M3 (Chromate)	12
				L16	OC80451A	Washer 6.5x13x1	5

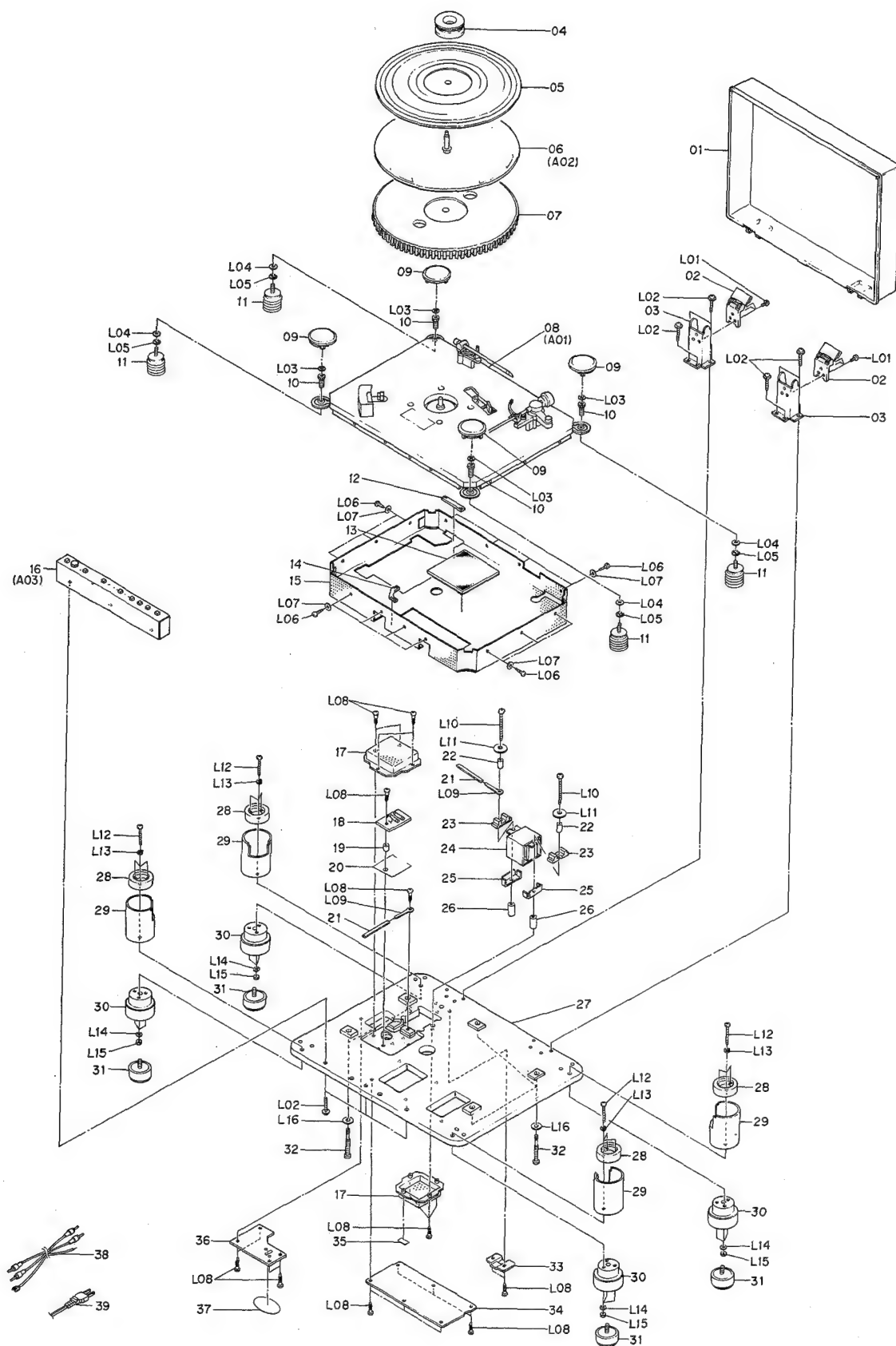


Fig. 7.1

7.2. Top Board (A01)

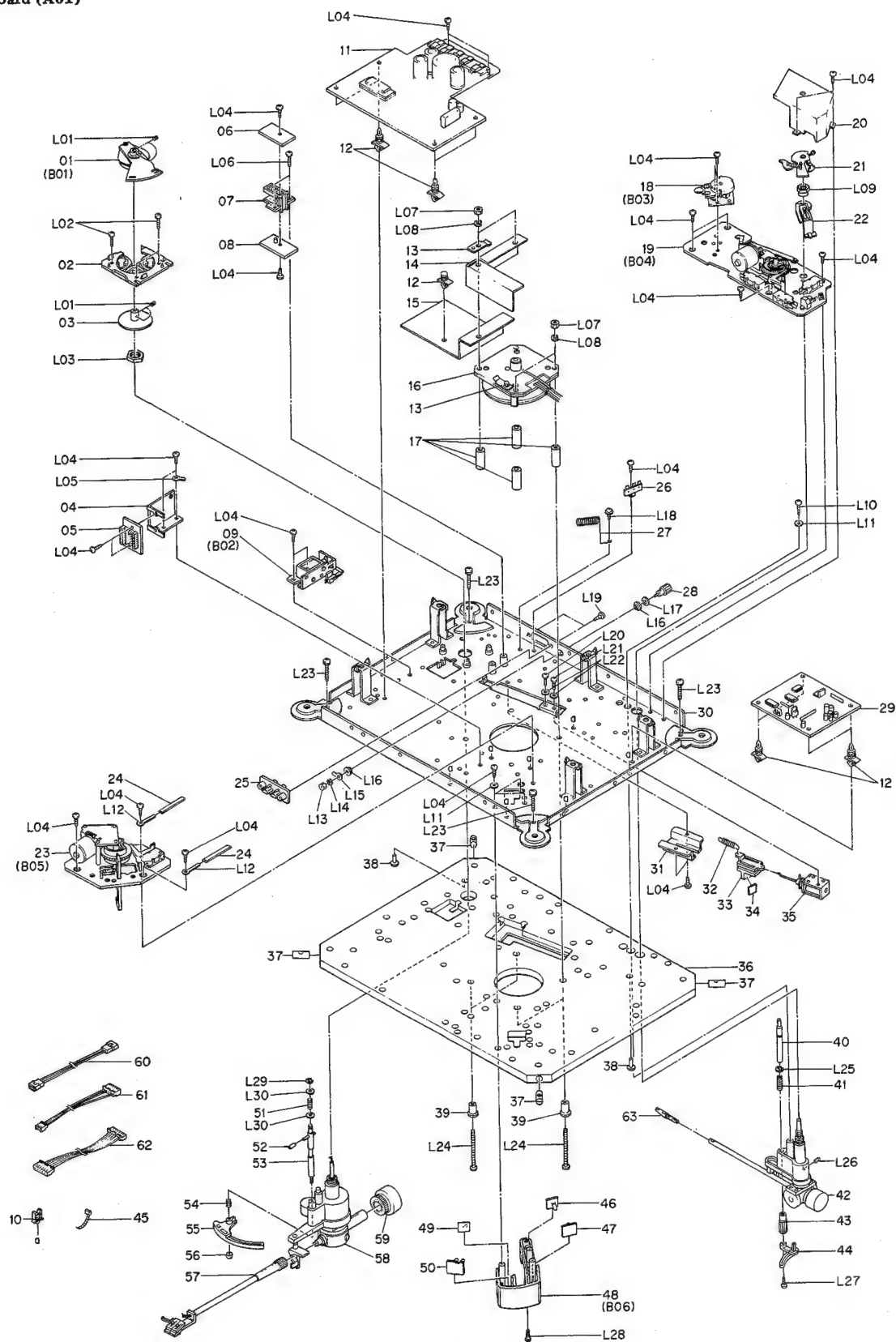


Fig. 7.2

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A01	CA80166A	Top Board Ass'y Serial No.: V10201001 -	1	L21	OC80461A	M3.5x6 @Pan Washer-faced	1
01	CA80126A	Arm Sensor Ass'y	1	L22	OC80460A	Washer 3.2x8x1	2
02	CA80125A	Drive Coil Ass'y	1	L23	OC80459A	M4x16 @Pan	4
03	CA80124A	Sensor Plate Ass'y	1	L24	OC80478A	M5x65 @Pan	4
04	OC80362A	Metal Angle	1	L25	OE00181A	E-Ring 3mm	1
05	CA80138A	Connector P.C.B. Ass'y	1	L26	—	Set Screw included in Sensor Arm Ass'y	(1)
06	CA80135A	Photo Detector P.C.B. Ass'y	1	L27	OE00818A	M3x8 @ Binding	1
07	OC80355A	Sensor Holder	1	L28	OC80452A	M3.1x13 @Pan (Wood Screw)	1
08	CA80134A	Sensor LED P.C.B. Ass'y	1	L29	OE00222A	E-Ring 2mm	1
09	CA80127A	Arm Elevation Solenoid Ass'y	1	L30	OE03001A	Washer 2mm (Nickel)	1
10	OC80309A	Wire Clamper	7	A02	CA80109A	Center Search Platter Ass'y Serial No.: V10201001 -	1
11	CA80133A	CPU P.C.B. Ass'y	1	01	CA80110A	Shaft Ass'y	1
12	OC80308A	P.C.B. Supporter	11	02	OC80260A	Spring	1
13	OC80444A	Leaf Spring	2	03	OC80259A	Stud	1
14	OC80442A	Shield Plate A	1	04	OC80256A	Center Search Platter	1
15	OC80443A	Shield Plate B	1	05	OC80261A	Rubber Washer	1
16	CA80179A	Main DD Motor Ass'y	1	L01	OC80474A	Fiber Washer	1
17	OC80313A	Spacer	4	L02	OC80475A	Nut Hex. M5 (threaded CCW)	1
18	CA80100A	Sensor Arm Positioner Ass'y	1	L03	OE00222A	E-Ring 2mm	1
19	CA80095A	Sensor Arm Mechanism Ass'y	1				
20	OC80363A	Light Shielding Cover	1				
21	CA80121A	Sensor Shutter Ass'y	1				
22	CA80120A	LED & Photo Detector Ass'y	1				
23	CA80090A	Center Search Rod Mechanism Ass'y	1				
24	OC80328A	UL Tube ϕ 3.3x60	2				
25	OC80439A	2P Pin Jack	1				
26	OC80441A	Lug Terminal	1				
27	OC80356A	Wire Clamper	1				
28	OC80440A	Earth Terminal	1				
29	CA80084A	Motor P.C.B. Ass'y	1				
30	CA80087A	Steel Chassis Ass'y	1				
31	OC80305A	Brake Plate	1				
32	OC80307A	Coil Spring for Brake	1				
33	OC80306A	Brake Shoe	1				
34	OC80432A	Brake Pad	1				
35	CA80088A	Brake Solenoid Ass'y	1				
36	OC80310A	Top Board	1				
37	OC80311A	Nut Bar	4				
38	OC80435A	Rubber Cap	2				
39	OC80312A	Bushing	4				
40	OC80331A	Lifter Rod	1				
41	OC80332A	Coil Spring for Lifter	1				
42	CA80119A	Sensor Arm Ass'y	1				
43	OC80330A	Lifter Base	1				
44	OC80333A	Sensor Arm Lifter	1				
45	OB08515A	Insu-Lock	15				
46	CA80139A	Pitch Control LED P.C.B. Ass'y	1				
47	CA80140A	Pitch Control Sensor P.C.B. Ass'y	1				
48	CA80162A	Center Search Rod Housing Ass'y	1				
49	OC80316A	Cover	1				
50	CA80141A	Strobe P.C.B. Ass'y	1				
51	OC80345A	Elevator Spring A	1				
52	OC80431A	Collar	1				
53	CA80123A	Elevator Shaft	1				
54	OC80346A	Elevator Spring B	1				
55	OC80347A	Elevator	1				
56	OC80348A	Elevator Nut	1				
57	OH04397A	Tonearm Pipe	1				
58	CA80178A	Tonearm Hinge Ass'y	1				
59	OC80479A	Tonearm Counterweight	1				
60	OC80582A	2P Power Cord (Canada)	1				
	OC80581A	2P Power Cord (except for Canada)	1				
61	OC80457A	6P Connector Cord	1				
62	OC80456A	7P Connector Cord	1				
63	OC80579A	Sensor Stylus	1				
L01	OE03005A	M3x5 Hex. Socket Head	4				
L02	OC80476A	M3x10 @Pan (Plastic)	3				
L03	—	Nut included in Tonearm Hinge Ass'y	(1)				
L04	OE00846A	BT 3x8 @Pan	27				
L05	OE00037A	Earth Lug B-5	1				
L06	OE00659A	M3x10 @Pan	2				
L07	OC80455A	Flange Hex. Nut M5	4				
L08	OE00819A	Spring Washer 5mm	4				
L09	—	Nut included in Sensor Arm Ass'y	(1)				
L10	OE00831A	BT 3x10 @Pan	1				
L11	OE00178A	Washer 3.3x8x0.5	4				
L12	OC80327A	Wire Clamper	1				
L13	—	Nut	(1)				
L14	—	Washer Spring	(1)				
L15	—	Lug	(1)				
L16	—	Collar	(2)				
L17	—	Washer	(1)				
L18	OC80458A	BT 3x8 @Pan Washer-faced	1				
L19	OE00594A	BT 3x8 @ Binding (Black Chromate)	2				
L20	OE00509A	M3x6 @Pan	1				

7.3. 'Center Search Platter Ass'y (A02)

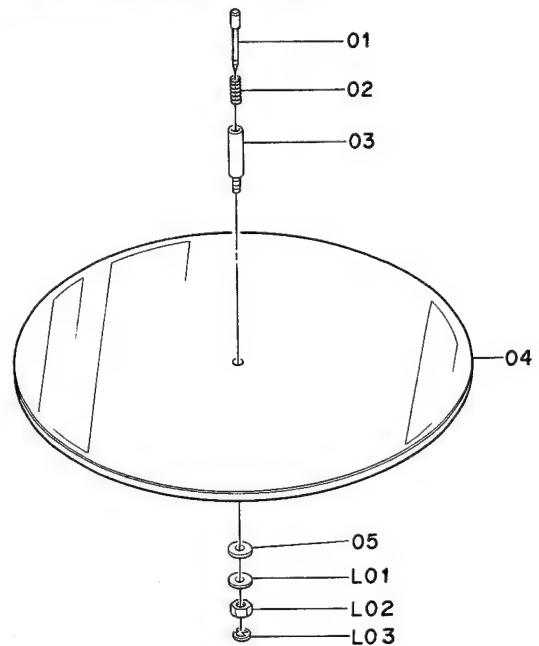


Fig. 7.3

7.4. Control Switch Ass'y (A03)

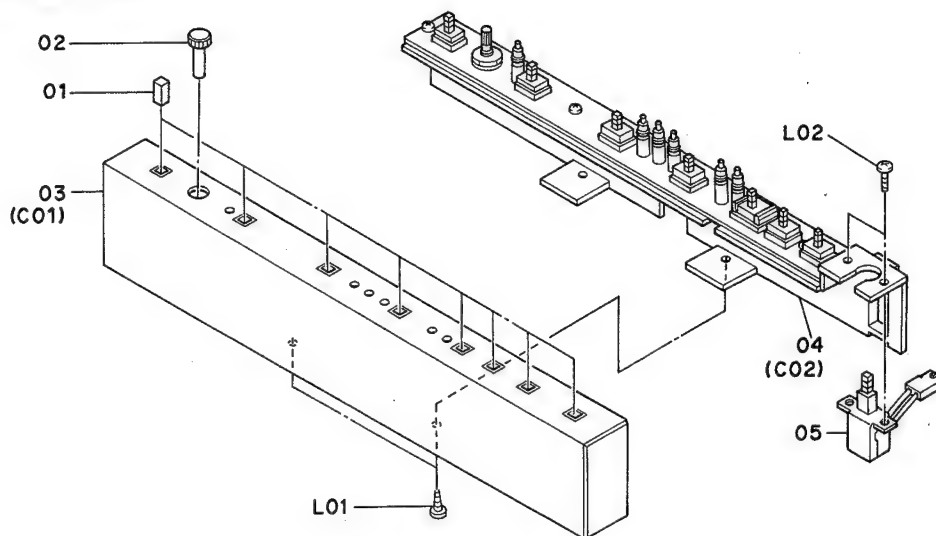


Fig. 7.4

7.5. Arm Sensor Ass'y (B01)

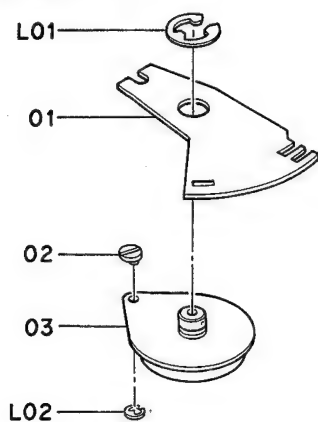


Fig. 7.5

7.6. Arm Elevation Solenoid Ass'y (B02)

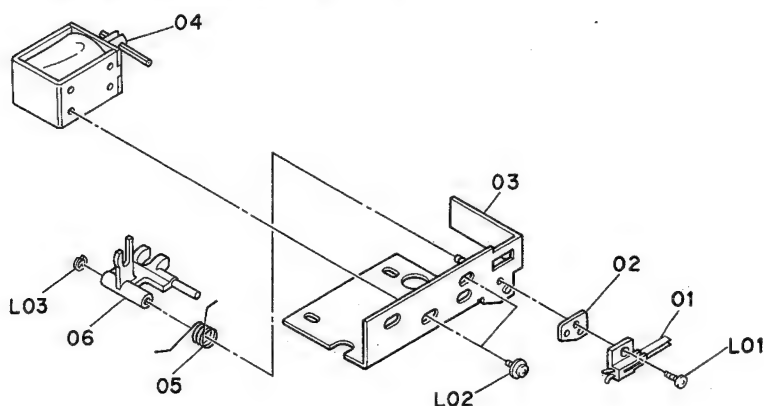


Fig. 7.6

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A03	CA80165A	Control Switch Ass'y Serial No.: V10201001 -	1	B02	CA80127A	Arm Elevation Solenoid Ass'y Serial No.: V10201001 -	1
01	OC80284A	Push Switch Button	8	01	CA80130A	Leaf Switch	1
02	OC80285A	Volume Knob	1	02	OC80354A	Spacer	1
03	CA80111A	Control Panel Ass'y	1	03	CA80128A	Angle Ass'y	1
04	CA80085A	Control Switch P.C.B. Ass'y	1	04	CA80129A	Solenoid Ass'y	1
05	CA80112A	Power Switch Ass'y	1	05	OC80352A	Coil Spring	1
L01	OE00846A	BT 3x8 @Pan	2	06	OC80353A	Lever	1
L02	OE00589A	M3x6 @Pan (Bronze)	2	L01	OE00219A	M2.6x5 @Pan	1
				L02	OE00618A	M3x4 @Pan Washer-faced	2
				L03	OE00222A	E-Ring 2mm	1
B01	CA80126A	Arm Sensor Ass'y Serial No.: V10201001 -	1				
01	OC80351A	Arm Sensor	1				
02	OC80350A	Eccentric Pin A	1				
03	CA80144A	Rotor Magnet Ass'y	1				
L01	OE03108A	E-Ring 10mm	1				
L02	OE03101A	E-Ring 3mm	1				

7.7. Sensor Arm Positioner Ass'y (B03)

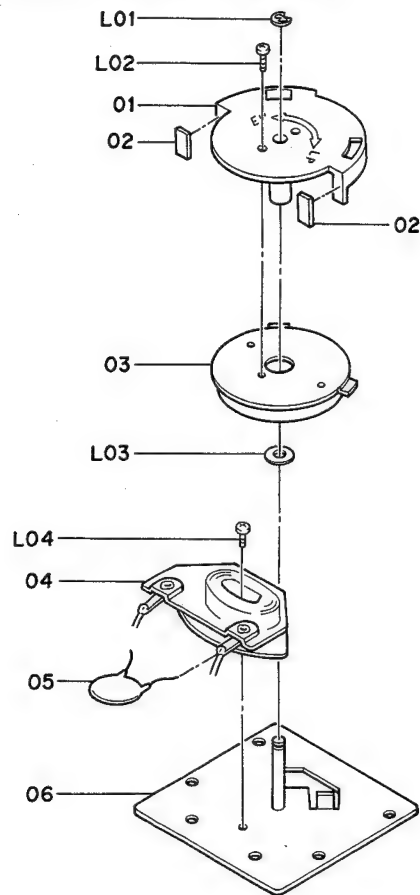


Fig. 7.7

7.8. Sensor Arm Mechanism Ass'y (B04)

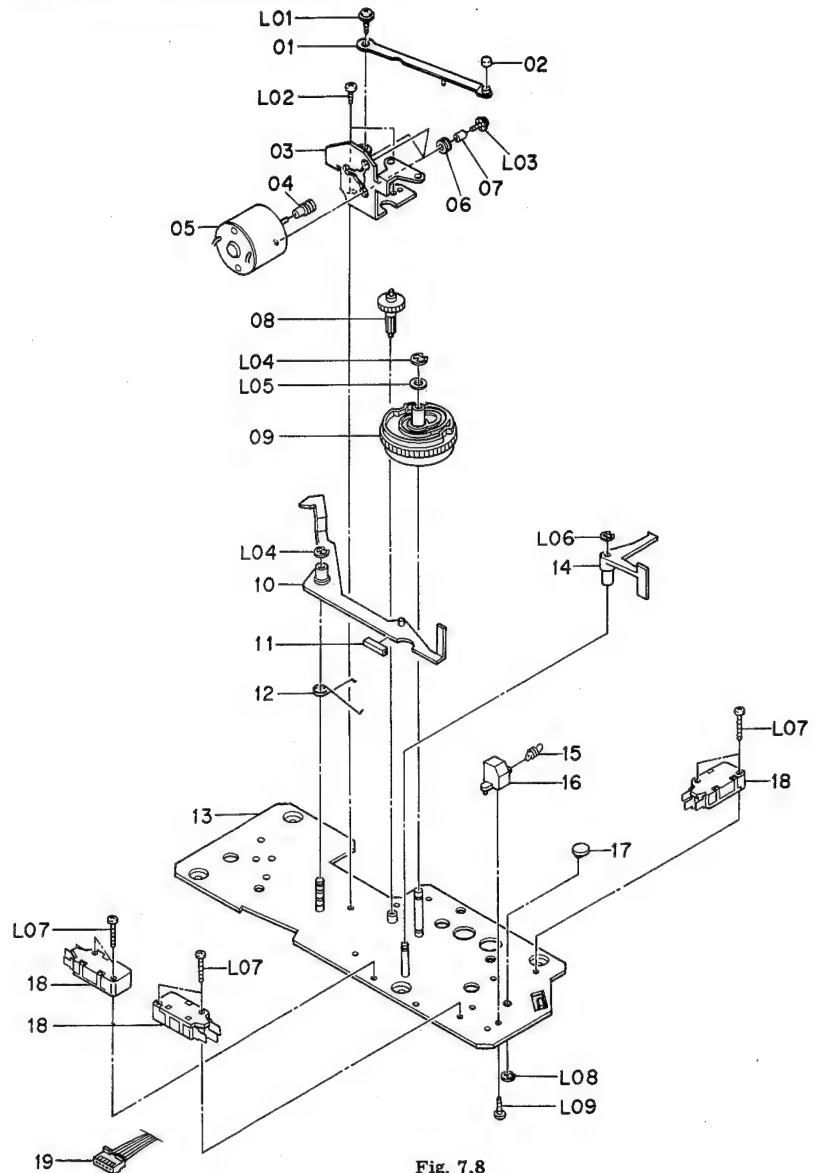


Fig. 7.8

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
B03	CA80100A	Sensor Arm Positioner Ass'y Serial No.: V10201001 -	1	07	OC80319A	Collar A	3
01	OC80340A	Selector Cam	1	08	OC80321A	Spur Gear A	1
02	OC80342A	Cushion	2	09	OC80320A	Main Gear	1
03	CA80117A	Magnet Ass'y	1	10	CA80097A	Disc Size Selector Arm Ass'y	1
04	CA80118A	Spool Ass'y	1	11	OC80426A	Arm Cover	1
05	OB01356A	Ceramic Capacitor 0.1μF	1	12	OC80334A	Spring A	1
06	CA80101A	Positioner Chassis Ass'y	1	13	CA80096A	Sensor Mechanism Chassis Ass'y	1
L01	OE00222A	E-Ring 2mm	1	14	OC80427A	Switch Arm B	1
L02	OE00217A	M2x6 @Pan	1	15	OC80343A	Spring C	1
L03	OC80341A	Mylar Washer 3.1x6x0.1	1	16	OC80338A	Guide	1
L04	OE00226A	M2.6x4 @Pan	1	17	OC80339A	Eccentric Pin B	1
B04	CA80095A	Sensor Arm Mechanism Ass'y Serial No.: V10201001 -	1	18	OC80576A	Micro Switch	3
01	CA80098A	Arm	1	19	OC80583A	5P Connector Cord	1
02	OC80337A	Friction Rubber	1	L01	OC80464A	BT 3x8 @Pan	1
03	OC80336A	Gear Bracket	1	L02	OE00862A	BT 3x6 @Pan	2
04	OC80322A	Worm Gear	1	L03	OC80465A	M2.6x6 @Pan Washer-faced	3
05	OC80282A	Sensor Arm Motor	1	L04	OE00043A	E-Ring 3.2mm	2
06	OC80318A	Rubber Cushion	3	L05	OC80467A	Washer 5.2x10x0.2	1
				L06	OE00222A	E-Ring 2mm	1
				L07	OC80466A	M2.6x14 @Pan	6
				L08	OE03101A	E-Ring 3mm	1
				L09	OE00846A	BT3x8 @Pan	1

7.9. Center Search Rod Mechanism Ass'y (B05)

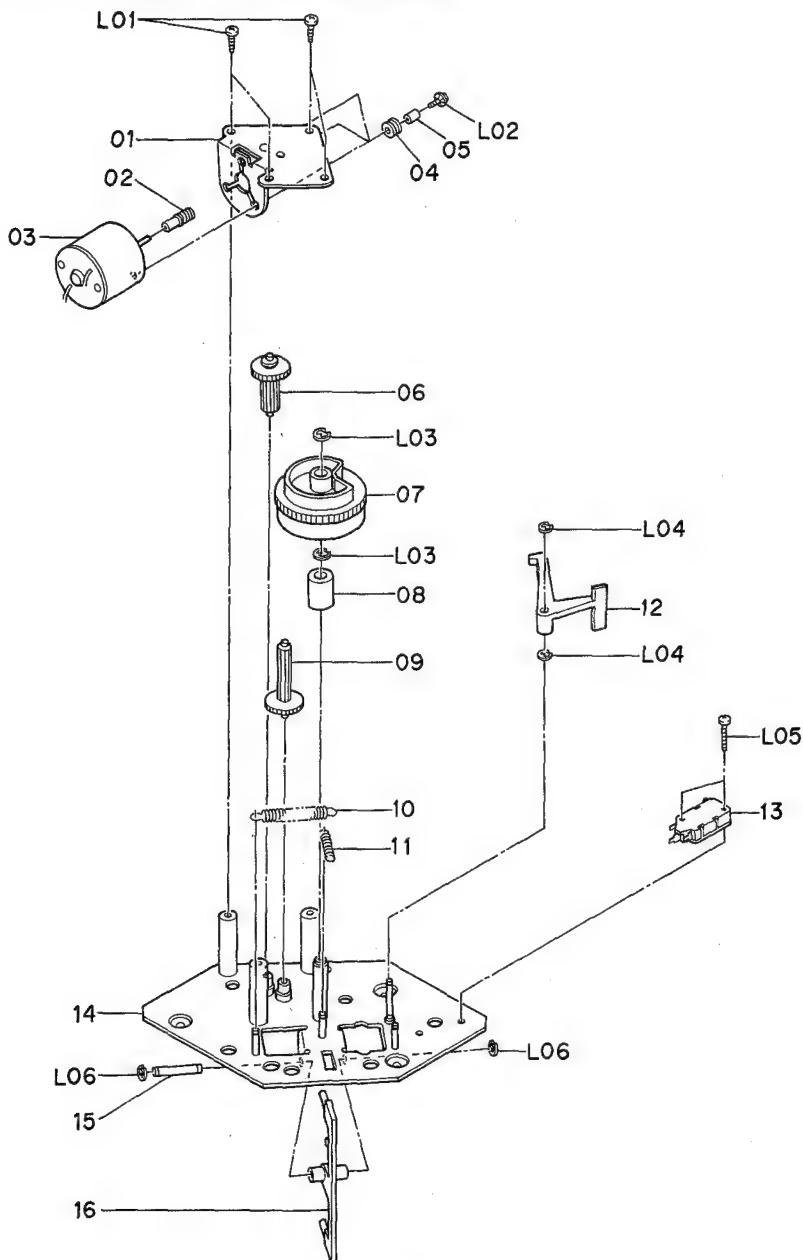


Fig. 7.9

7.10. Center Search Rod Housing Ass'y (B06)

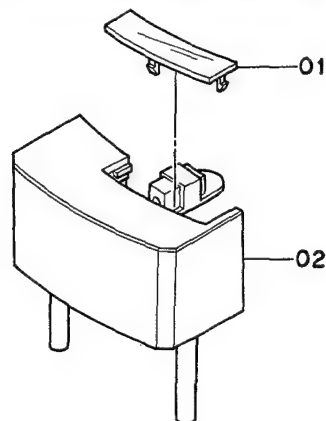


Fig. 7.10

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
B05	CA80090A	Center Search Rod Mechanism Ass'y Serial No.: V10201001 -	1	13	0C80576A	Micro Switch	1
01	CA80092A	Motor Holder Ass'y	1	14	CA80091A	Mechanism Chassis Ass'y	1
02	0C80322A	Worm Gear	1	15	0C80325A	Arm Shaft	1
03	0C80317A	Center Search Rod Activation Motor	1	16	CA80093A	Arm Ass'y	1
04	0C80318A	Rubber Cushion	3	L01	0E00846A	BT 3x8 ⊕ Pan	4
05	0C80319A	Collar A	3	L02	0C80465A	M2.6x6 ⊕ Pan Washer-faced	3
06	0C80423A	Spur Gear B	1	L03	0E00134A	E-Ring 4mm	2
07	0C80335A	Control Cam	1	L04	0E00222A	E-Ring 2mm	2
08	0C80425A	Collar B	1	L05	0C80466A	M2.6x14 ⊕ Pan	2
09	0C80323A	Pinion Gear	1	L06	0E00181A	E-Ring 3mm	2
10	0C80424A	Spring A	1	B06	CA80162A	Center Search Rod Housing Ass'y Serial No.: V10201001 -	1
11	0C80326A	Spring B	1	01	0C80315A	Window	1
12	0C80324A	Switch Arm A	1	02	0C80314A	Center Search Rod Housing	1

7.11. Control Panel Ass'y (C01)

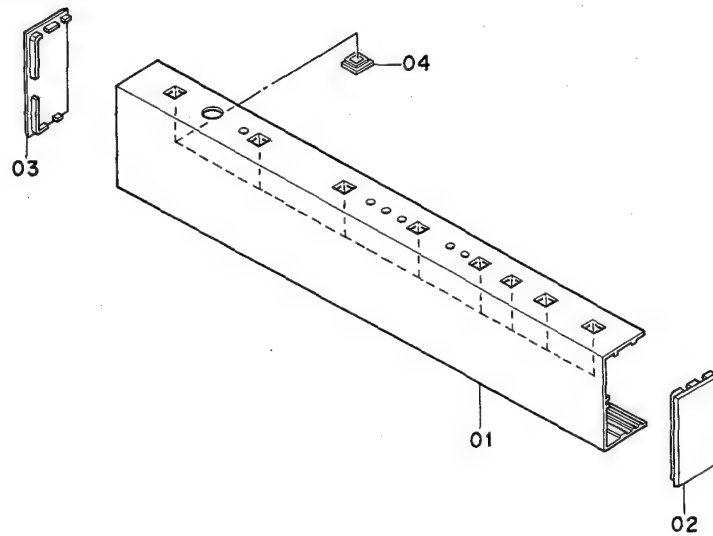


Fig. 7.11

7.12. Control Switch P.C.B. Ass'y (C02)

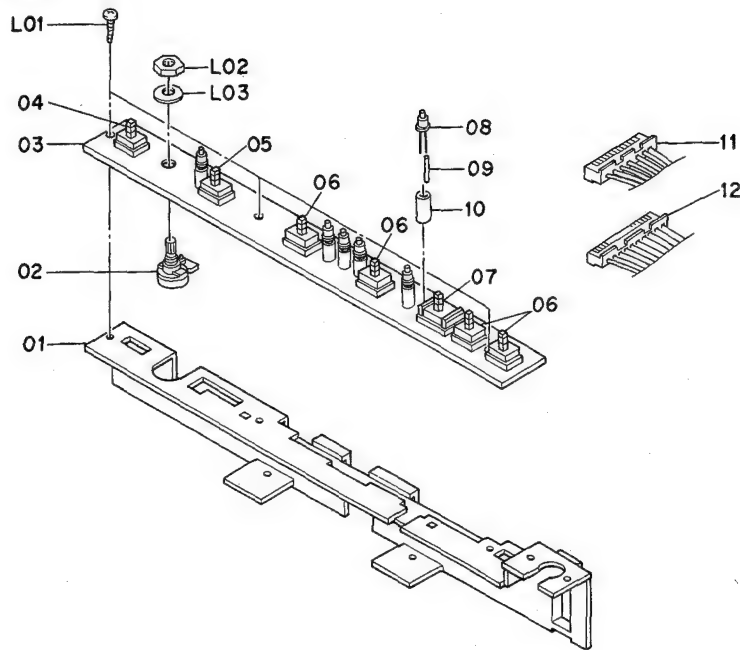


Fig. 7.12

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
C01	CA80111A	Control Panel Ass'y Serial No.: V10201001 -	1	03	OC80241A	Control Switch P.C.B.	1
01	OC80267A	Control Panel	1	04	OC80273A	Push Switch (Speed)	1
02	OC80268A	Side Panel R	1	05	OC80275A	Push Switch (Quartz Lock)	1
03	OC80269A	Side Panel L	1	06	OC80274A	Push Switch	4
04	OC80270A	Push Switch Escutcheon	8	07	OC80276A	Push Switch (Disc Size)	1
C02	CA80085A	Control Switch P.C.B. Ass'y Serial No.: V10201001 -	1	08	OC80279A	LED	6
01	OC80271A	P.C.B. Holder	1	09	OC80280A	UL Tube $\phi 1 \times 11$	6
02	OC80272A	Volume 5K B	1	10	OC80281A	UL Tube $\phi 3.3 \times 11$	6
				11	OC80277A	11P Connector	1
				12	OC80278A	10P Connector	1
				L01	OE00864A	BT 3x8 ϕ Pan	3
				L02	—	Nut for Volume	(1)
				L03	—	Washer for Volume	(1)

8. MOUNTING DIAGRAMS AND PARTS LIST

- Notes: 1. Mounting diagram shows a dip side view of the printed circuit board.
 2. Diode is 1SS53, 1S1555, or 1SS176 unless otherwise specified.
 3. Following transistors are interchangeable with each other.
 a. 2SA733, 2SA608SP, 2SA1048, 2SA1175
 b. 2SC945, 2SC536SP, 2SC2458, 2SC2785
 4. Abbreviation for part name:
 TR — Transistor, SiD — Silicon Diode, GD — Germanium Diode, ZD — Zener Diode
 RK — Carbon Resistor, RM — Metal Film Resistor, RF — Fail Safe Type Resistor, RC — Cement Resistor,
 RW — Wire Wound Resistor
 CE — Electrolytic Capacitor, CM — Mylar Capacitor, CC — Ceramic Capacitor, CP — PP Capacitor,
 CT — Tantalum Capacitor, CM — Film Capacitor, C — Mica Capacitor

8.1. Return Sensor P.C.B. Ass'y

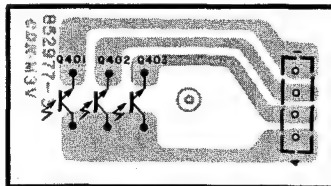


Fig. 8.1

8.2. Strobo P.C.B. Ass'y

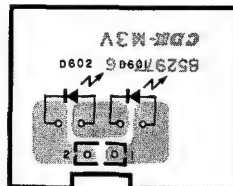


Fig. 8.2

8.3. Pitch Control LED P.C.B. Ass'y

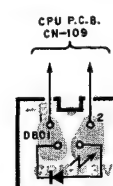


Fig. 8.3

8.4. Return Signal LED P.C.B. Ass'y

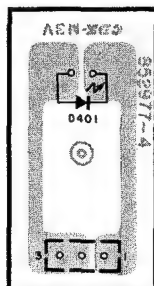


Fig. 8.4

8.5. Connector P.C.B. Ass'y

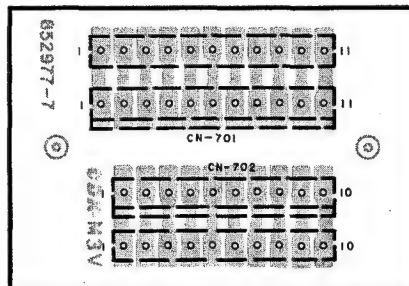


Fig. 8.5

8.6. Fuse P.C.B. Ass'y

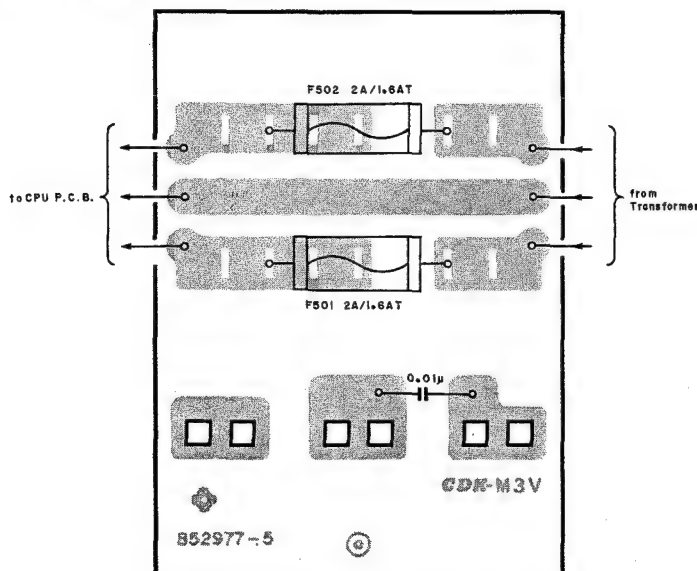


Fig. 8.6

Schematic Ref. No.	Part No.	Description
Q401,402 403	CA80134A	Return Sensor P.C.B. Ass'y
	0C80244A	Return Sensor P.C.B. Photo TR PN120S
	0C80556A	Connector (1)
D601,602	CA80141A	Strobo P.C.B. Ass'y
	0C80247A	Strobo P.C.B. Strobo LED
	0C80558A	Strobo LED
D801	CA80139A	Pitch Control LED P.C.B. Ass'y
	0C80249A	Pitch Control LED P.C.B.
	0C80559A	Pitch Control LED
D401	CA80135A	Return Signal LED P.C.B. Ass'y
	0C80245A	Return Signal LED P.C.B.
	0C80557A	Return Signal LED
CN701 CN702	CA80138A	Connector P.C.B. Ass'y
	0C80248A	Connector P.C.B. 11P-LP Connector
	0C80555A	10P-LP Connector
	0C80554A	Connector 72V
	0C80486A	Connector 71V
	CA80136A	Fuse P.C.B. Ass'y
	0C80246A	Fuse P.C.B.
	0C80564A	CM 0.01μ (1)
	0C80565A	Terminal Pin (6)
	0C80566A	Connector F1 (1) (Fuses F501 and F502 are listed on synthesis mechanism parts list.)

8.7. Pitch Control Sensor P.C.B. Ass'y

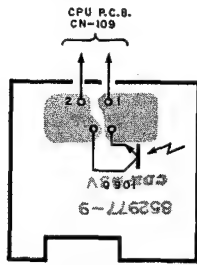


Fig. 8.7

8.8. Motor P.C.B. Ass'y

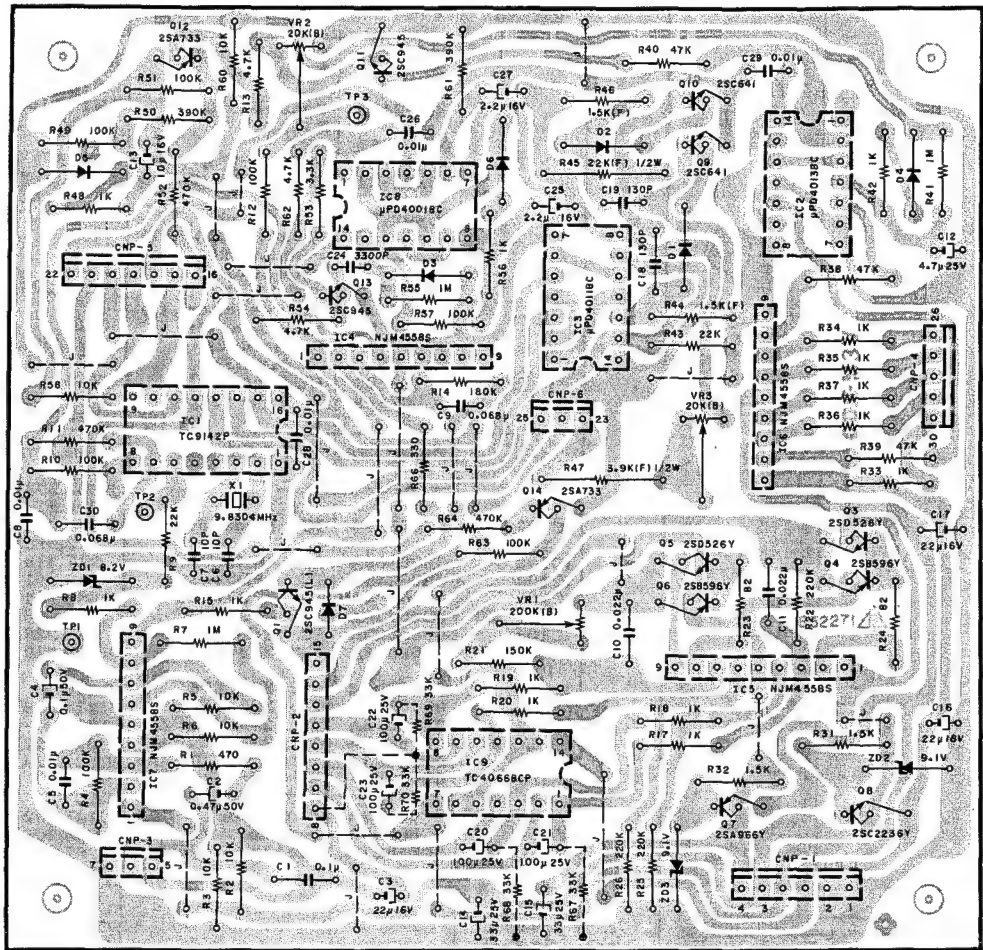


Fig. 8.8

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
Q901	CA80140A	Pitch Control Sensor P.C.B. Ass'y	R1	OB05576A	RK 470 1/4W J	R53	OB01681A	RK 3.3K 1/4W J
	OC80250A	Pitch Control Sensor P.C.B.	R2,3	OB01888A	RK 10K 1/4W J	R66	OB05577A	RK 330 1/4W J
	OC80556A	Photo TR PN120S	5,6			R67,68	OB05509A	RK 33K 1/4W J
			58,60			C1	OB00093A	CM 0.1μ 50V
IC1 IC2 IC3 IC4,5 IC8 IC9 X1 ZD1 ZD2,3 D1-7 Q1,11 Q3,5 Q4,6 Q7 Q8 Q9,10 Q12,14 VR1 VR2,3	CA80084A	Motor P.C.B. Ass'y	R4,10	OB01889A	RK 100K 1/4W J	C2	OC80531A	CE 0.47μ 50V
			12,49			C3,16	OC80527A	CE 22μ 16V
			51,57			17		
			63			C4	OC80532A	CE 0.1μ 50V
	OC80252A	Motor P.C.B.	R7,41	OB05776A	RK 1M 1/4W J	C5,26	OB09856A	CM 0.01μ 50V J
	OB06357A	IC TC9142P	55			C6,7	OB09277A	CC 10P 50V D
	OB06358A	IC μPD4013BC	R8,15	OB01857A	RK 1K 1/4W J (15)	C8,28	OB09290A	CC 0.01μ 50V Z
	OB06178A	IC μPD4011BC	17-20			29		
	OB11050A	IC NJM4558S	33-37			C9,30	OB05586A	CM 0.068μ 50V K
			42,48			C10,11	OB09860A	CM 0.022μ 50V J
			56			C12	OC80528A	CE 4.7μ 25V
	OB06143A	IC μPD4001BC	R9,43	OB05615A	RK 22K 1/4W J	C13	OC80526A	CE 10μ 16V
	OB06169A	IC TC4066BP	R11,52	OB01684A	RK 470K 1/4W J	C14,15	OC80529A	CE 33μ 25V
	OC80521A	Xtal 9.8304MHz	64			C18,19	OC80523A	CC 130P 50V
	OB06298A	ZD 8.2V RD8.2EB3	R13,54	OB01846A	RK 4.7K 1/4W J	C20,21	OC80530A	CE 100μ 25V
	OC80508A	ZD 9.1V RD9.1EB1	62			22,23		
	OB06181A	SiD 1SS53	R14	OB05640A	RK 180K 1/4W J	C24	OB09850A	CM 3300P 50V J
	OB01872A	TR 2SC945L (P,Q)	R21	OB05626A	RK 150K 1/4W J	C25,27	OC80525A	CE 2.2μ 16V
			R22,25	OB05625A	RK 220K 1/4W J	CNP1	OC80551A	6P-LP Connector
			26			CNP2	OC80553A	8P-LP Connector
	OC80502A	TR 2SD526Y	R23,24	OB05631A	RK 82 1/4W J	CNP3,6	OC80548A	3P-LP Connector
	OC80499A	TR 2SB596Y	R31,32	OB05698A	RK 1.5K 1/4W J	CNP4	OC80550A	5P-LP Connector
	OC80498A	TR 2SA966Y	R38,39	OB05641A	RK 47K 1/4W J	CNP5	OC80552A	7P-LP Connector
	OC80500A	TR 2SC2236Y	40			TP1,2,3	OC80545A	Test Pin 1
	OC80501A	TR 2SC641K						
	OB06013A	TR 2SA733 (P,Q)	R44,46	OB22247A	RM 1.5K 1/4W F			
	OC80517A	Semi-fixed VR 200K	R45	OC80513A	RM 22K 1/2W F			
	OC80518A	Semi-fixed VR 20K	R47	OC80512A	RM 3.9K 1/2W F			
			R50,61	OB05676A	RK 390K 1/4W J			

The diagram illustrates the electrical system for the B-29 Superfortress, showing the power distribution from the main bus to various components. The system includes a main bus, a generator, a battery, and various switches and relays. The components are labeled as follows:

- Generator:** Located at the top left, it provides power to the main bus.
- Battery:** Located at the top right, it provides power to the main bus.
- Main Bus:** The central distribution point for the electrical system.
- Engine:** Located at the bottom left, it provides power to the main bus.
- Generator:** Located at the bottom right, it provides power to the main bus.
- Switches and Relays:** Various switches and relays are shown, including the "Generator Switch", "Battery Switch", "Engine Switch", and "Generator Switch".
- Wiring:** The diagram shows the complex wiring connecting the components to the main bus and the various switches and relays.

The diagram is a detailed technical drawing, showing the electrical system for the B-29 Superfortress. It includes a main bus, a generator, a battery, and various switches and relays. The components are labeled as follows:

- Generator:** Located at the top left, it provides power to the main bus.
- Battery:** Located at the top right, it provides power to the main bus.
- Main Bus:** The central distribution point for the electrical system.
- Engine:** Located at the bottom left, it provides power to the main bus.
- Generator:** Located at the bottom right, it provides power to the main bus.
- Switches and Relays:** Various switches and relays are shown, including the "Generator Switch", "Battery Switch", "Engine Switch", and "Generator Switch".
- Wiring:** The diagram shows the complex wiring connecting the components to the main bus and the various switches and relays.

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	CA80085A	Control Switch P.C.B. Ass'y	113		
	OC80241A	Control Switch P.C.B.	CN101	OC80551A	6P-LP Connector
	OC80279A	LED (6)	CN103	OC80550A	5P-LP Connector
	OC80272A	Volume 5K B (1)	CN104,106	OC80547A	2P-LP Connector
	OC80273A	Push Switch (Speed) (1)	110		
	OC80275A	Push Switch (Quartz Lock) (1)	CN107	OC80552A	7P-LP Connector
	OC80276A	Push Switch (Disc Size) (1)	CN109	OC80549A	4P-LP Connector
	OC80274A	Push Switch (4)	TP101,102	OC80560A	5P Post
	OC80277A	11P Connector (1)	TP103-106	OC80546A	Test Pin 2
	OC80278A	10P Connector (1)			
	OC80271A	P.C.B. Holder (1)	IC201	OC80574A	IC μ PD4081C
	OE00864A	BT 3x8 @Pan (3)	IC202,204	OB06178A	IC μ PD4011BC
	OC80280A	UL Tube ϕ 1x11 (6)	IC203	OC80497A	IC μ PD4023BC
	OC80281A	UL Tube ϕ 3.3x11 (6)	IC205	OB06124B	IC NJM4558D
			Q201,202	OB01872A	TR 2SC945L (P,Q)
			204,206		
			Q203	OB06013A	TR 2SA733 (P,Q)
			Q205	OC80503A	TR 2SD677 (C,D)
			Q207	OB06316A	TR 2SD882 (P,Q)
			D201-205	OB06181A	SiD 1SS53
			D206	OC80506A	SiD F14C
			R201	OB05578A	RK 180 1/4W J
			R202,203	OB01889A	RK 100K 1/4W J
			204,211		
			R205,206	OB05615A	RK 22K 1/4W J
			212,213		
			217,218		
			229,231		
			R207,208	OB01887A	RK 5.6K 1/4W J
			225,226		
			227,228		
			R209,219	OB01888A	RK 10K 1/4W J
			220		
			R210	OB01854A	RK 39K 1/4W J
			R214,216	OB01684A	RK 470K 1/4W J
			R215	OB05675A	RK 3.9K 1/4W J
			R221,222	OB01857A	RK 1K 1/4W J
			R223,224	OB05641A	RK 47K 1/4W J
			R230	OC80516A	RC 330 5W
			R232	OC80510A	RK 270 1/2W
			C201,202	OB09290A	CC 0.01 μ 50V Z
			203,206		
			207,212		
			C204,211	OC80528A	CE 4.7 μ 25V
			C205	OB05796A	CM 0.047 μ 50V J
			C208	OC80538A	CE 10 μ 25V
			C209	OC80542A	CE 1000 μ 50V
			C210	OB01780A	CM 0.1 μ 50V J
			CN201	OC80550A	5P-LP Connector
			CN202	OC80549A	4P-LP Connector
			CN203,204	OC80548A	3P-LP Connector
			IC301	OC80561A	IC NJM78M05A
			IC302	OB11013A	IC μ PC7818H
			IC303	OC80562A	IC μ PC7918H
			IC304	OB06124B	IC NJM4558D
			Q301	OB06094A	TR 2SB536 (2) (L)
			Q302	OB06095A	TR 2SD381 (2) (L)
			Q303	OC80498A	TR 2SA966Y
			Q304	OB06013A	TR 2SA733 (P,Q)
			Q305	OC80500A	TR 2SC2236Y
			Q306	OB01872A	TR 2SC945L (P,Q)
			ZD301	OB06230A	ZD 5.1V RD5.1EB2
			D301	OC80507A	Diode Bridge RB401
			R301,305	OB01857A	RK 1K 1/4W J
			R302,306	OB01846A	RK 4.7K 1/4W J
			R303,307	OB01679A	RK 100 1/4W J
			R304	OB01888A	RK 10K 1/4W J
			R308,309	OB09292A	RK 10K 1/4W F
			313,314		
			R311,316	OB01887A	RK 5.6K 1/4W J
			R312,317	OB05627A	RK 330K 1/4W J
			R315	OC80515A	RM 14.5K 1/4W F
			R318	OB05794A	RK 68

8.10. CPU P.C.B. Ass'y

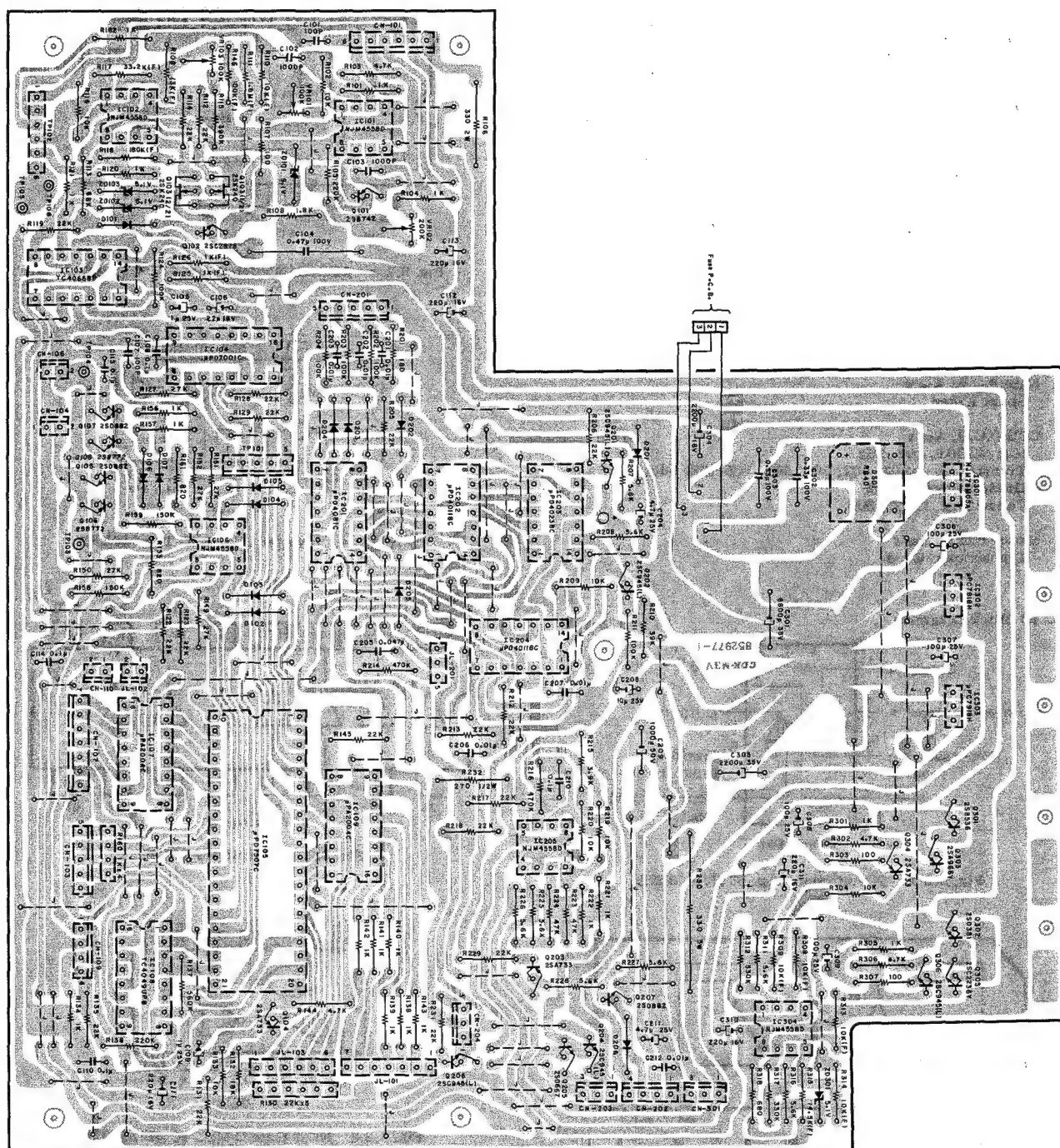


Fig. 8.10

Schematic Ref. No.	Part No.	Description
	OC80543A	Heat Sink Angle (1)
	OE00507A	Nut Hex. M3 (2) (Chromate)
	OE00509A	M3x6 ⊕ Pan (3) (Chromate)
	OE00659A	M3x10 ⊕ Pan (2) (Chromate)

9. SCHEMATIC DIAGRAM

9.1. Attention to Servicemen

(1) Caution

- If a part is in need of removing (or replacing) for service, it should be remounted (or replaced with specified parts) by the same methods as before after servicing.
- The appliance should be used only specified parts for preventing a risk of fire and electric shock and maintaining the characteristics.
- Before returning the repaired appliance to a customer, check to insure that the exposed part is accurately insulated from the Power Supply by measuring the leakage current or the insulation resistance between them.

(2) Parts Replacement

Following parts shall be replaced with the specified ones. Refer to the parts list.

(a) Power Supply Circuit

Power Cord
Power Switch
Power Transformer: T1
Fuses: F501, F502

(b) Fuse P.C.B. Ass'y

Spark Killer

(c) CPU P.C.B. Ass'y

ICs: IC301, 302, 303
Transistors: Q301, 302, 303, 305, 105-108, 205, 207
Diode Bridge: D301
Capacitors: C301, 305

(d) Motor P.C.B. Ass'y

Transistors: Q1-8

9.2. IC Block Diagrams

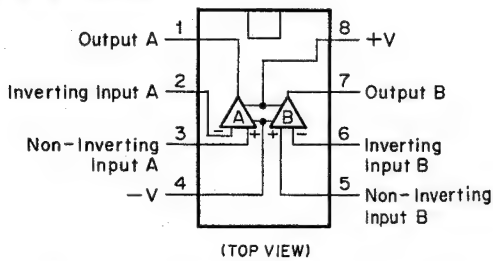


Fig. 9.2.1 Operational Amp. IC NJM4558D

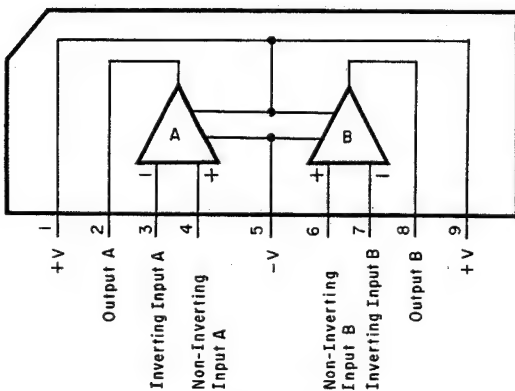


Fig. 9.2.2 Operational Amp. IC NJM4558S

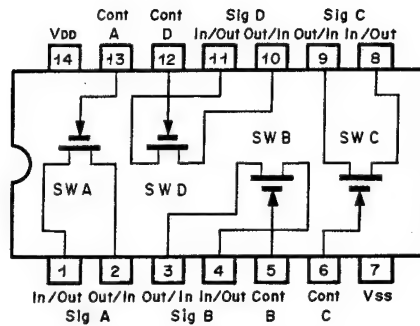


Fig. 9.2.3 Bilateral Switch C-MOS IC TC4066BP

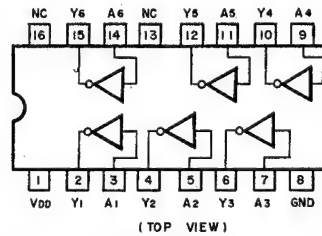


Fig. 9.2.4 Inverter C-MOS IC TC4049UPB

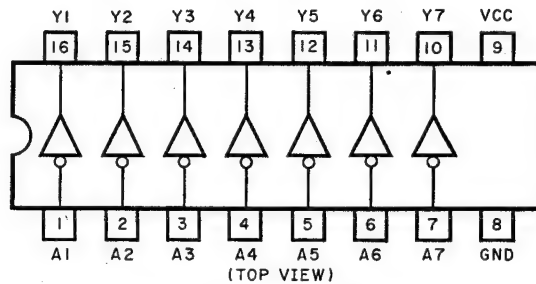


Fig. 9.2.5 Driver μ PA2004C

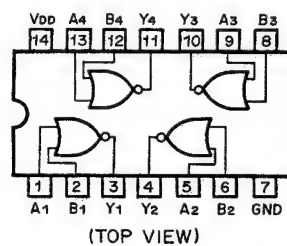


Fig. 9.2.6 NOR Gate C-MOS IC μ PD4001BC

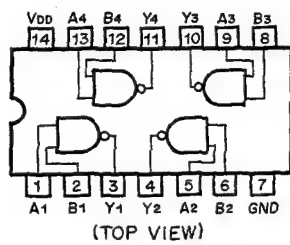


Fig. 9.2.7 NAND Gate C-MOS IC μ PD4011BC

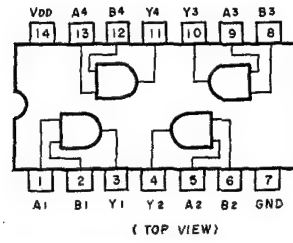


Fig. 9.2.8 AND Gate C-MOS IC μ PD4081BC

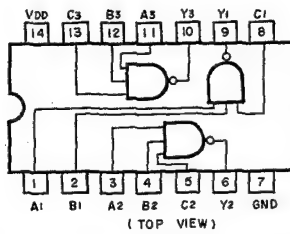


Fig. 9.2.9 NAND Gate C-MOS IC μ PD4023BC

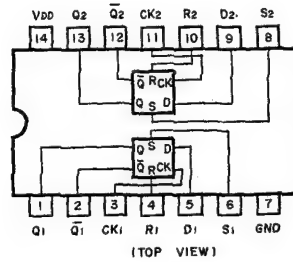


Fig. 9.2.10 D-Type Flip-Flop C-MOS IC TC4013BP

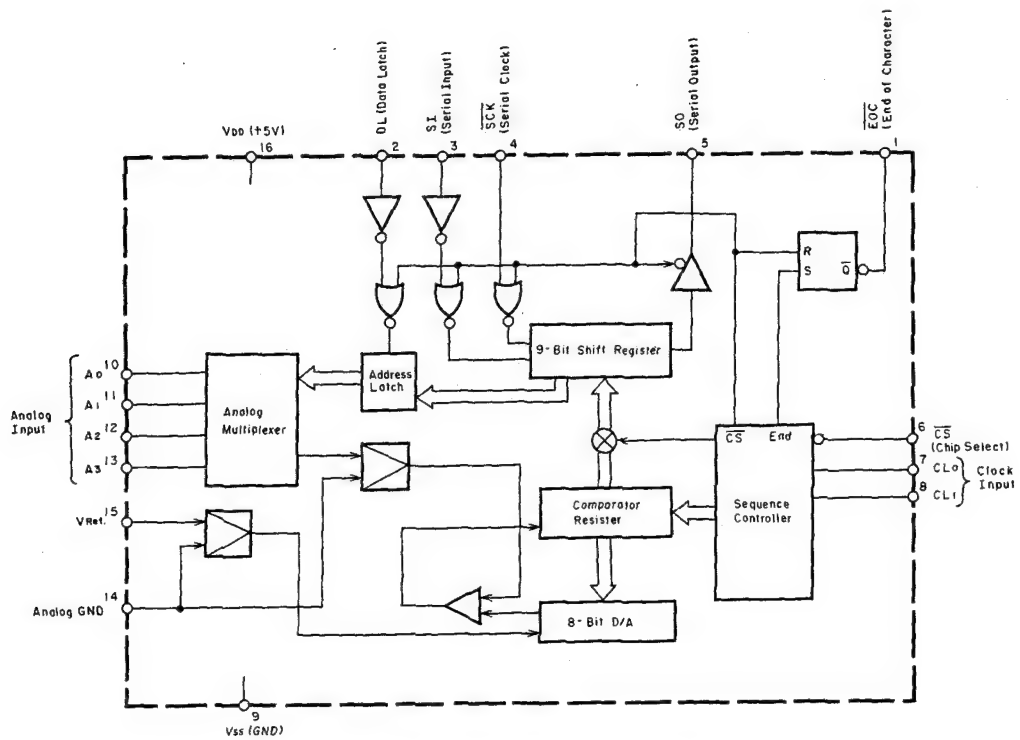


Fig. 9.2.11 C-MOS 8-Bit A/D Converter μ PD7001C

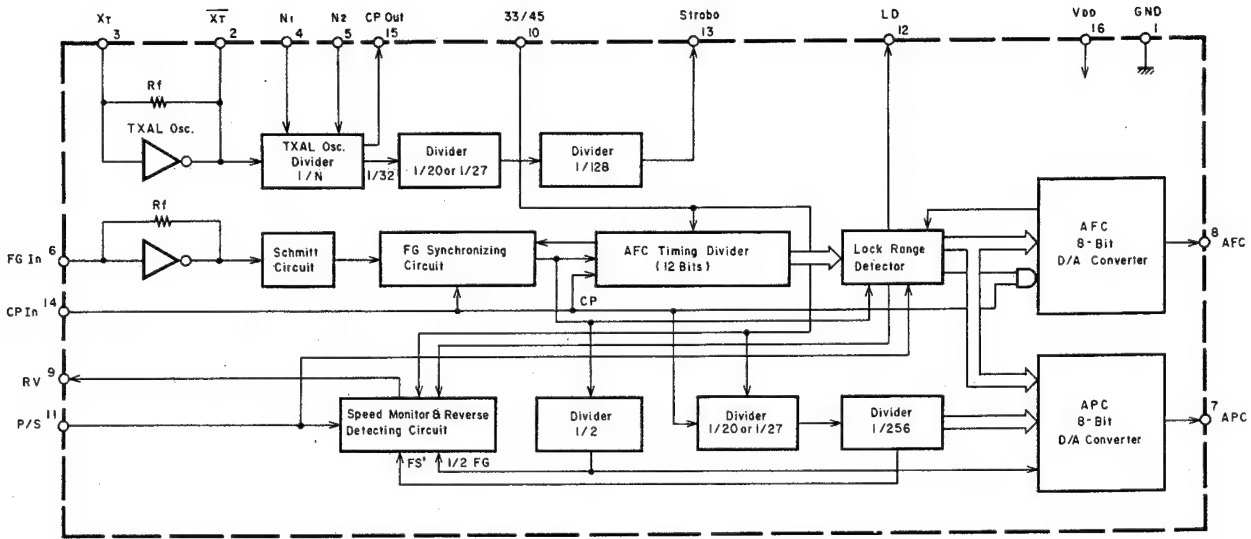


Fig. 9.2.12 C²-MOS IC Quartz PLL Motor Control TC9142P

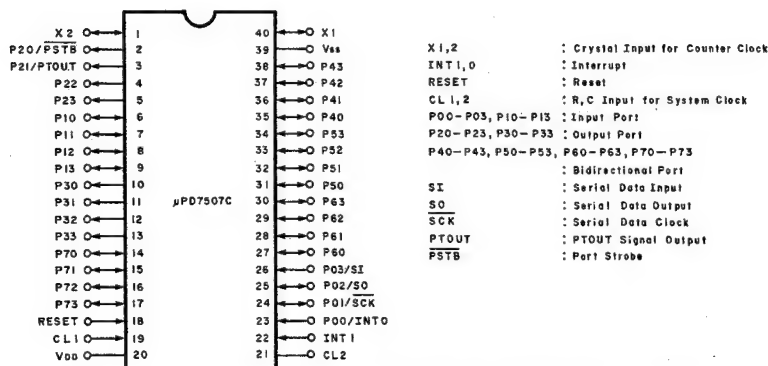
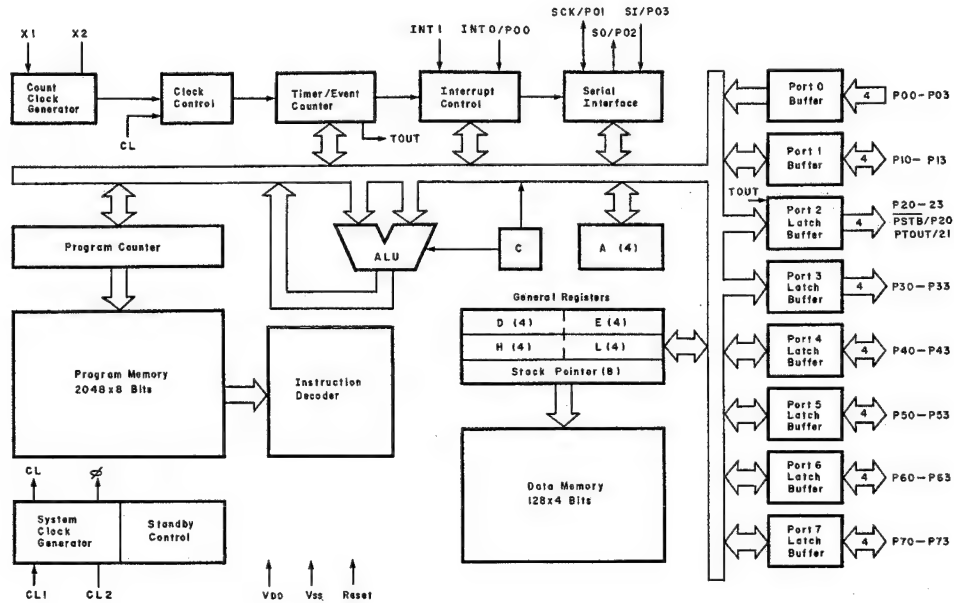


Fig. 9.2.13 MOS 4-Bit Micro-processor μ PD7507C

9.3. Schematic Diagram

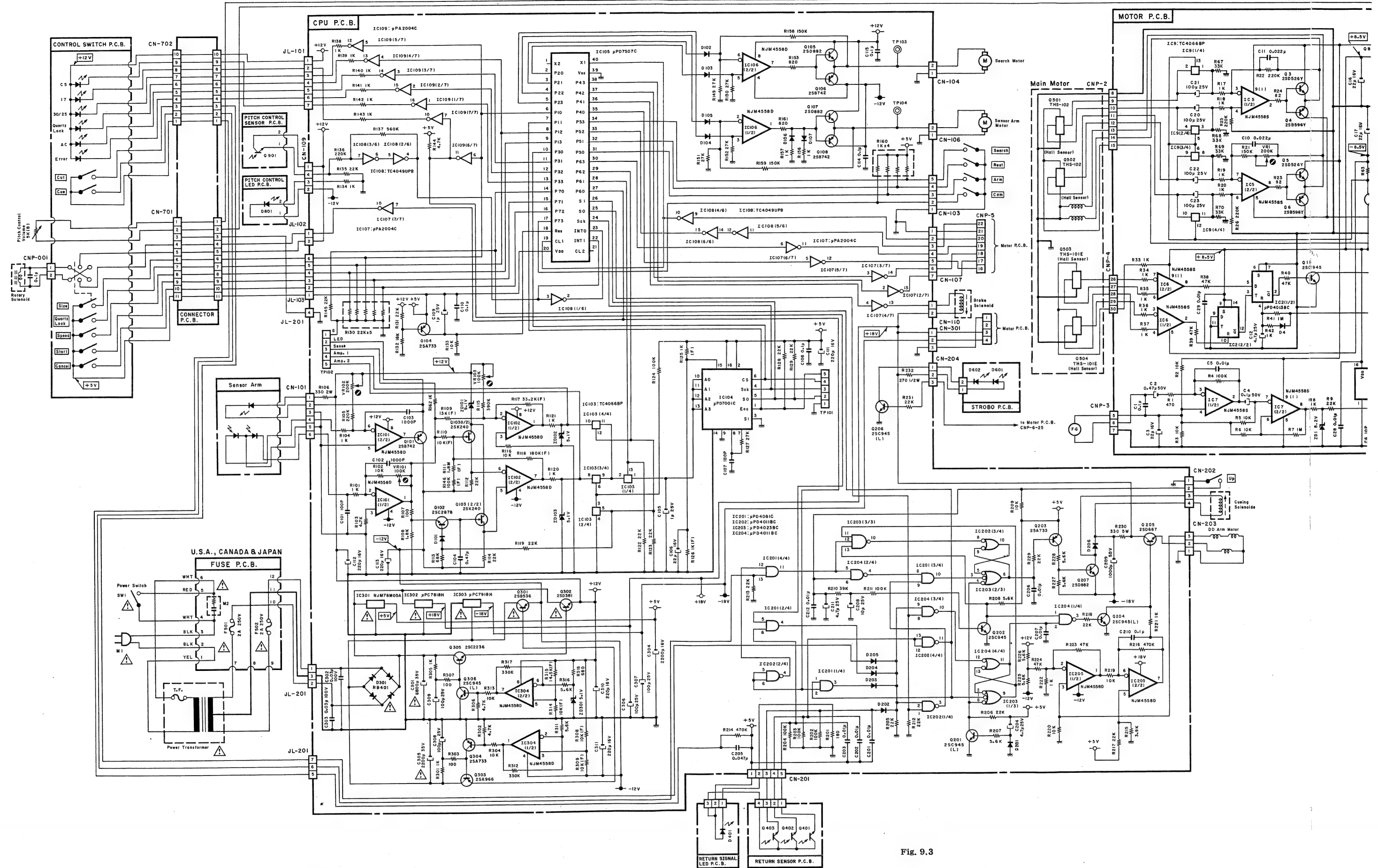
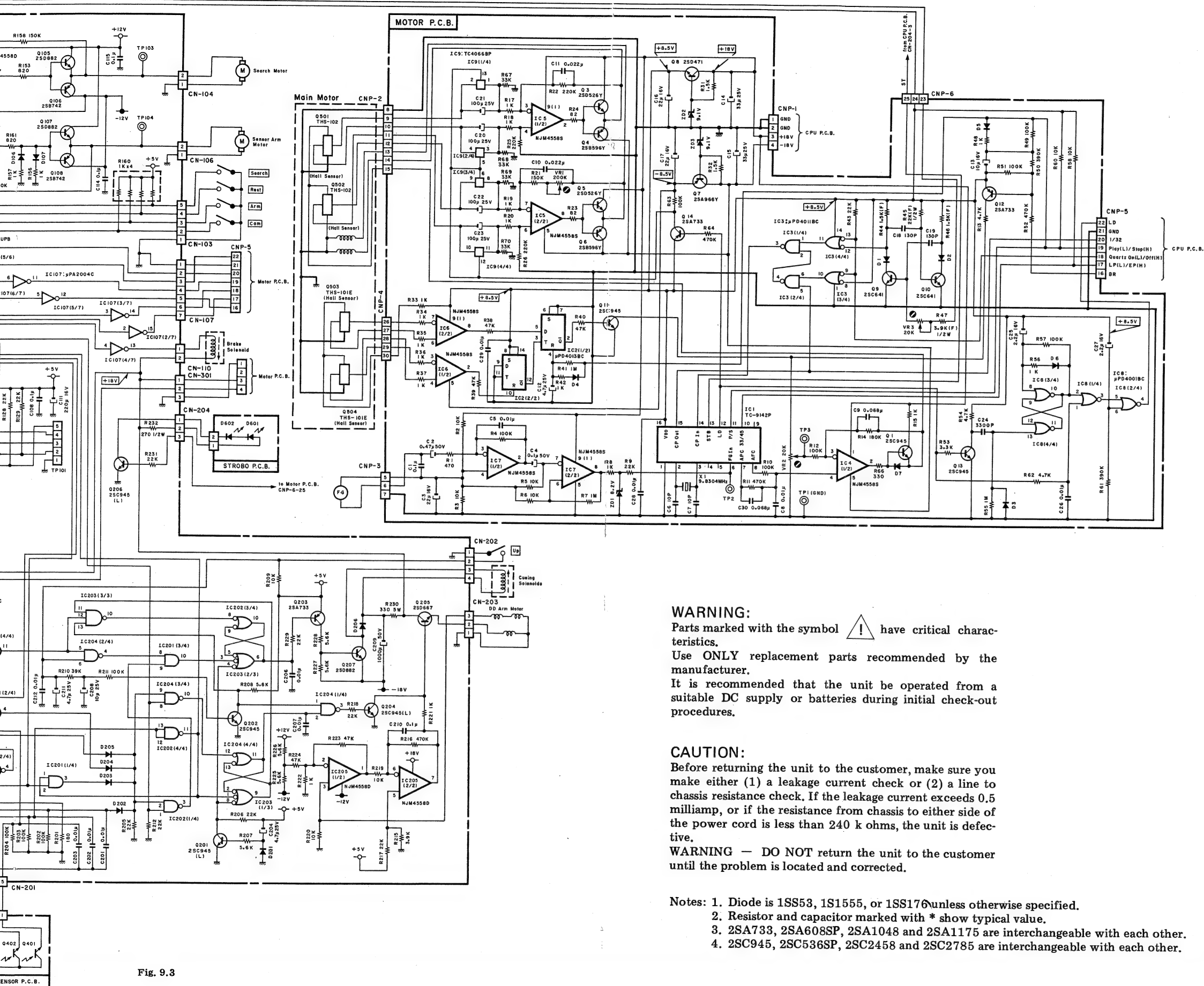



Fig. 9.3



WARNING:

Parts marked with the symbol  have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer.

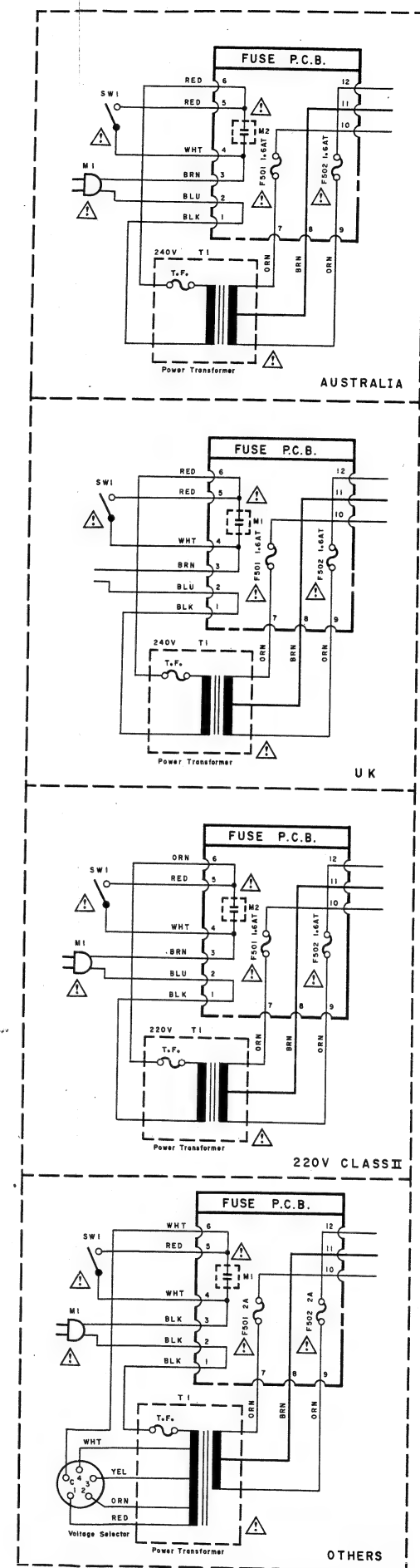
It is recommended that the unit be operated from a suitable DC supply or batteries during initial check-out procedures.

CAUTION:

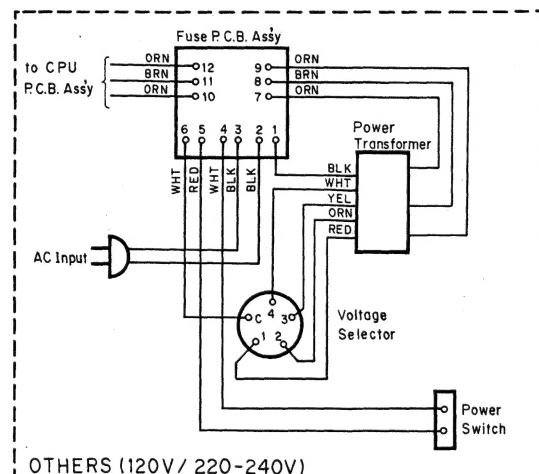
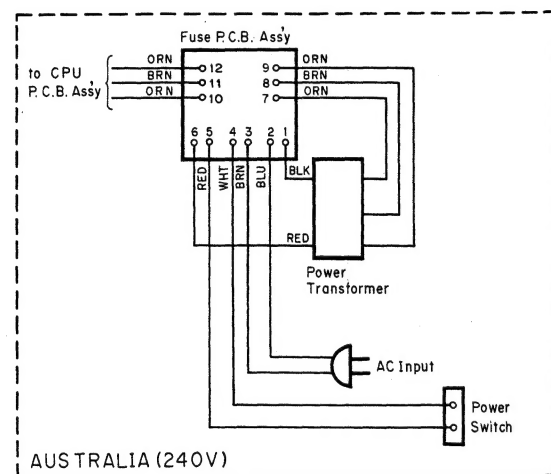
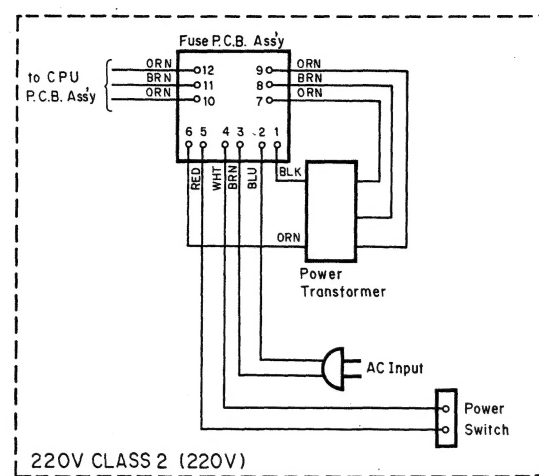
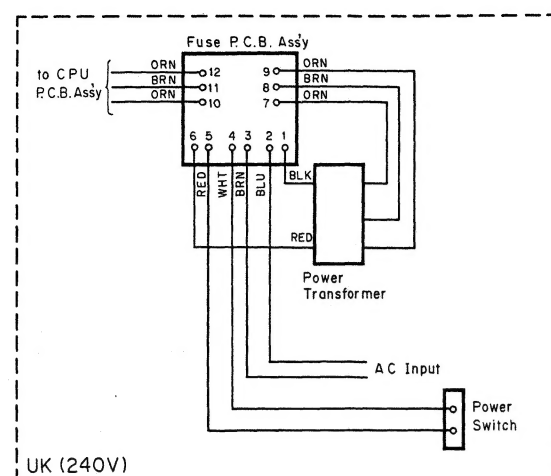
Before returning the unit to the customer, make sure you make either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamp, or if the resistance from chassis to either side of the power cord is less than 240 k ohms, the unit is defective.

WARNING — DO NOT return the unit to the customer until the problem is located and corrected.

- Notes: 1. Diode is 1SS53, 1S1555, or 1SS170 unless otherwise specified.
 2. Resistor and capacitor marked with * show typical value.
 3. 2SA733, 2SA608SP, 2SA1048 and 2SA1175 are interchangeable with each other.
 4. 2SC945, 2SC536SP, 2SC2458 and 2SC2785 are interchangeable with each other.



10. WIRING DIAGRAM



Notes: 1. Table of wire colors

BRN — Brown	BLU — Blue
RED — Red	VIO — Violet
ORN — Orange	GRY — Gray
YEL — Yellow	WHT — White
GRN — Green	BLK — Black

2. Component side view of the P.C.B. is illustrated unless otherwise specified.

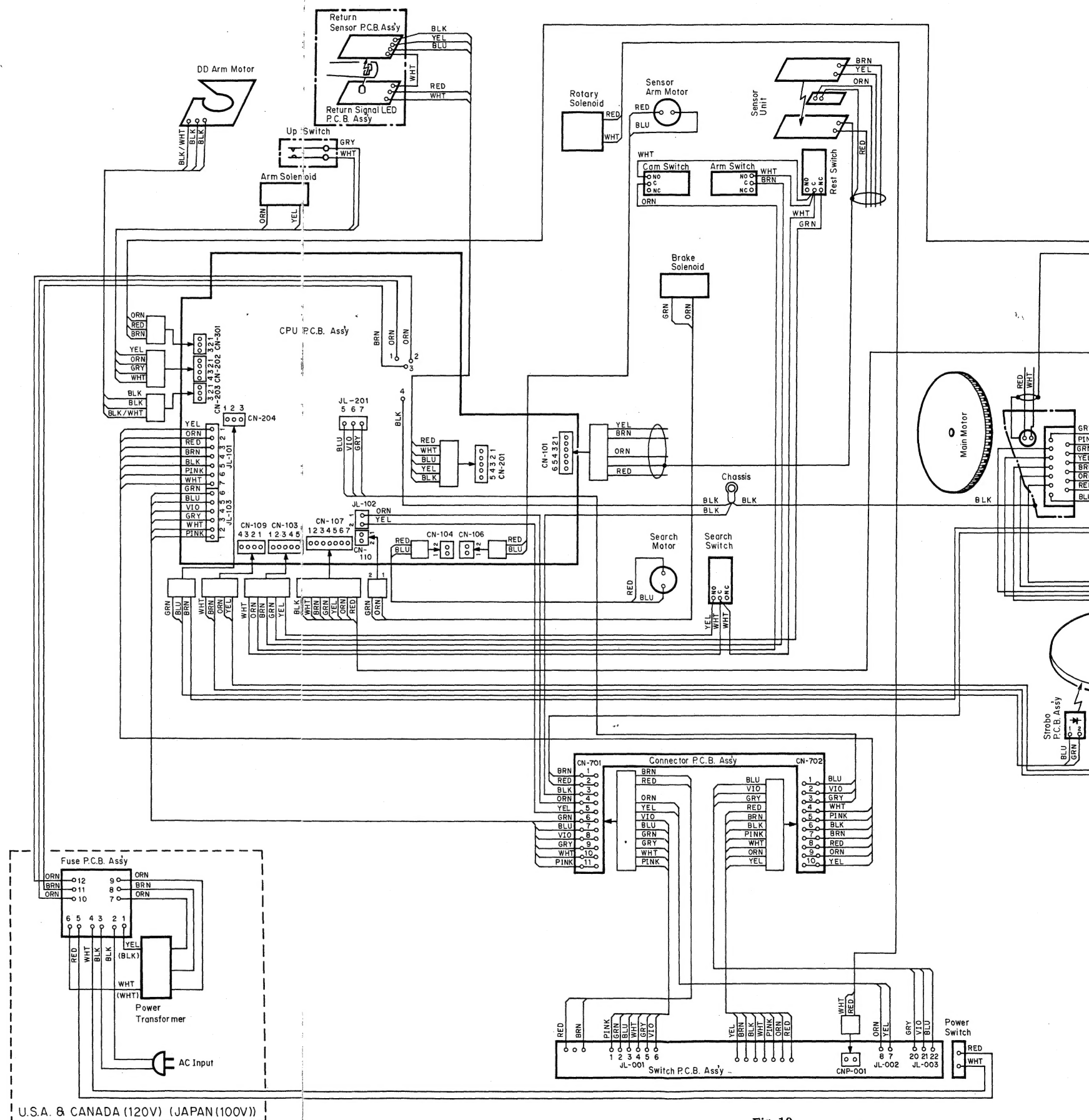


Fig. 10

11. BLOCK DIAGRAM

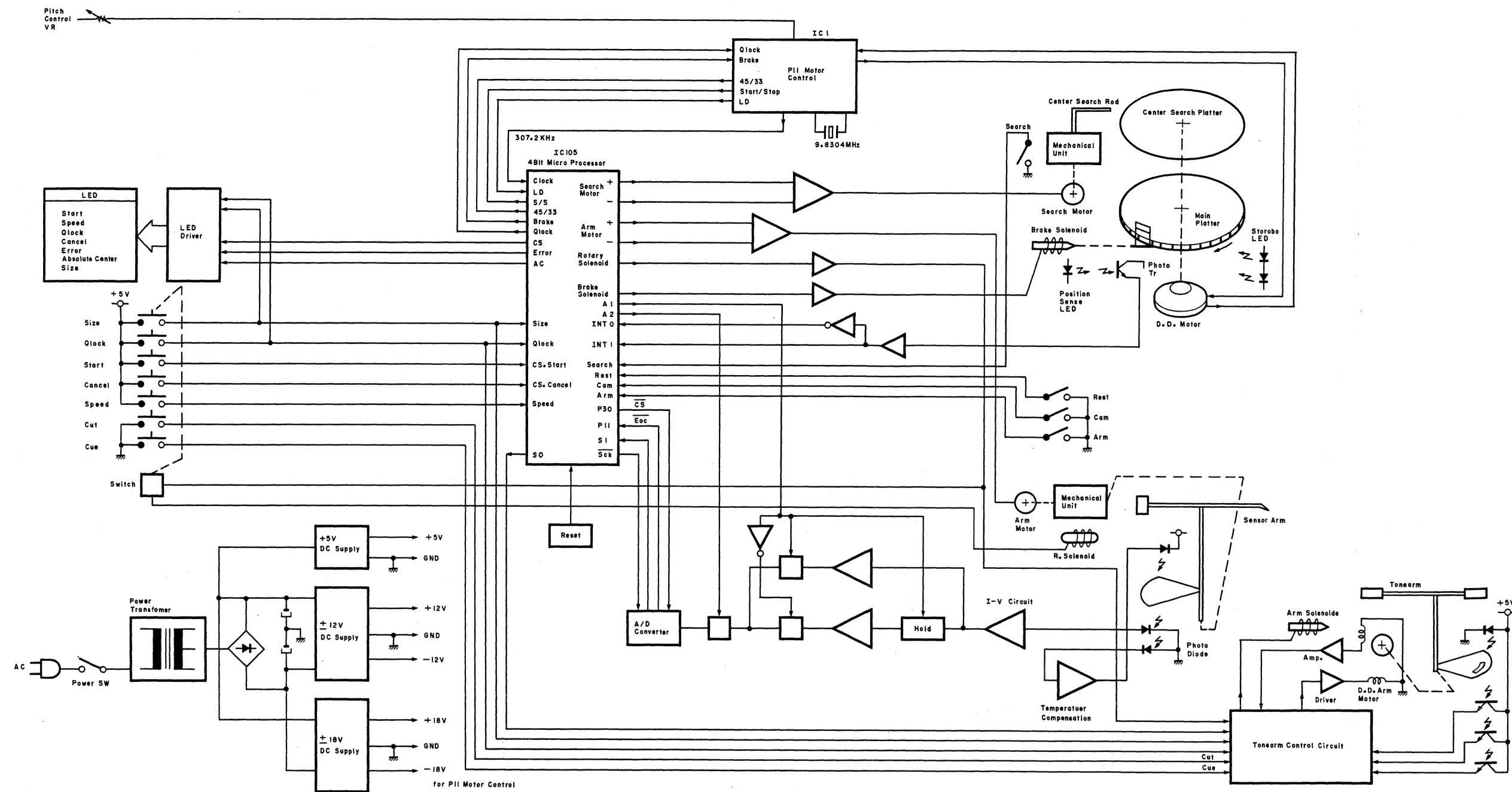


Fig. 11

12. SPECIFICATIONS

Phono Motor Section

Drive System	Direct Drive
Drive Motor	Quartz PLL DC, brushless, slotless, coreless Super Linear Torque Motor
Revolution Speeds	33-1/3, 45 rpm
Pitch Control	Adjustment range $\pm 6\%$
Main Platter	Aluminium diecast (thickness 18 mm, diameter 310 mm, weight 1.4 kg)
Center Search Platter	Glass (thickness 6 mm, diameter 303 mm, weight 550 g)
Start-up Time	Within one revolution
Speed Deviation	Unmeasurable (with quartz lock)
Speed Drift	Unmeasurable (with quartz lock)
Wow-and-Flutter	0.008% (Wtd rms, FG direct) 0.03% (Wtd rms, after center search)
Signal-to-Noise Ratio	Better than 78 dB (DIN-B)
Inertia Moment	380 kg/cm ²

Tonearm Section

Type	Static balance, straight arm pipe <ul style="list-style-type: none">• oil-damping feature• exchangeable arm pipe
Total Arm Length	305 mm
Effective Arm Length	237 mm
Effective Arm Weight	14 g (without cartridge)
Tracking Force Adjustment	
Range	0—3 g
Allowable Cartridge Weight	4—11 g
Cartridge Change Principle	By exchanging pipes (chuck joint principle)
Offset Angle	21° 30'
Overhang	15 mm
Tracking Error	+2.5° to -1°
Arm Lifter	Oil-damped

General

Power Requirements	100, 120, 120/220-240, 220 or 240 V AC; 50/60 Hz (according to country of sale)
Power Consumption	23 W
Dimensions	546 (W) x 230 (H) x 421 (D) millimeters 21-1/2 (W) x 9-1/16 (H) x 16-9/16 (D) inches
Weight	Approx. 20 kg 44 lb 1 oz

- Design and specifications are subject to change for further improvement without notice.

Service Manual

Nakamichi DRAGON-CT

Nakamichi Corporation

Tokyo Office
Shinjuku Daiichi Seimei Bldg.
2-7-1 Nishishinjuku, Tokyo
Phone (03) 342-4461
Telex : 2324721 (NAKAM J)

Nakamichi U.S.A. Corporation

19701 South Vermont Avenue
Torrance, California 90502
Phone : (213) 538-8150

Nakamichi GmbH

Stephanienstrasse 6, 4000 Düsseldorf 1
Phone : (0211) 359036